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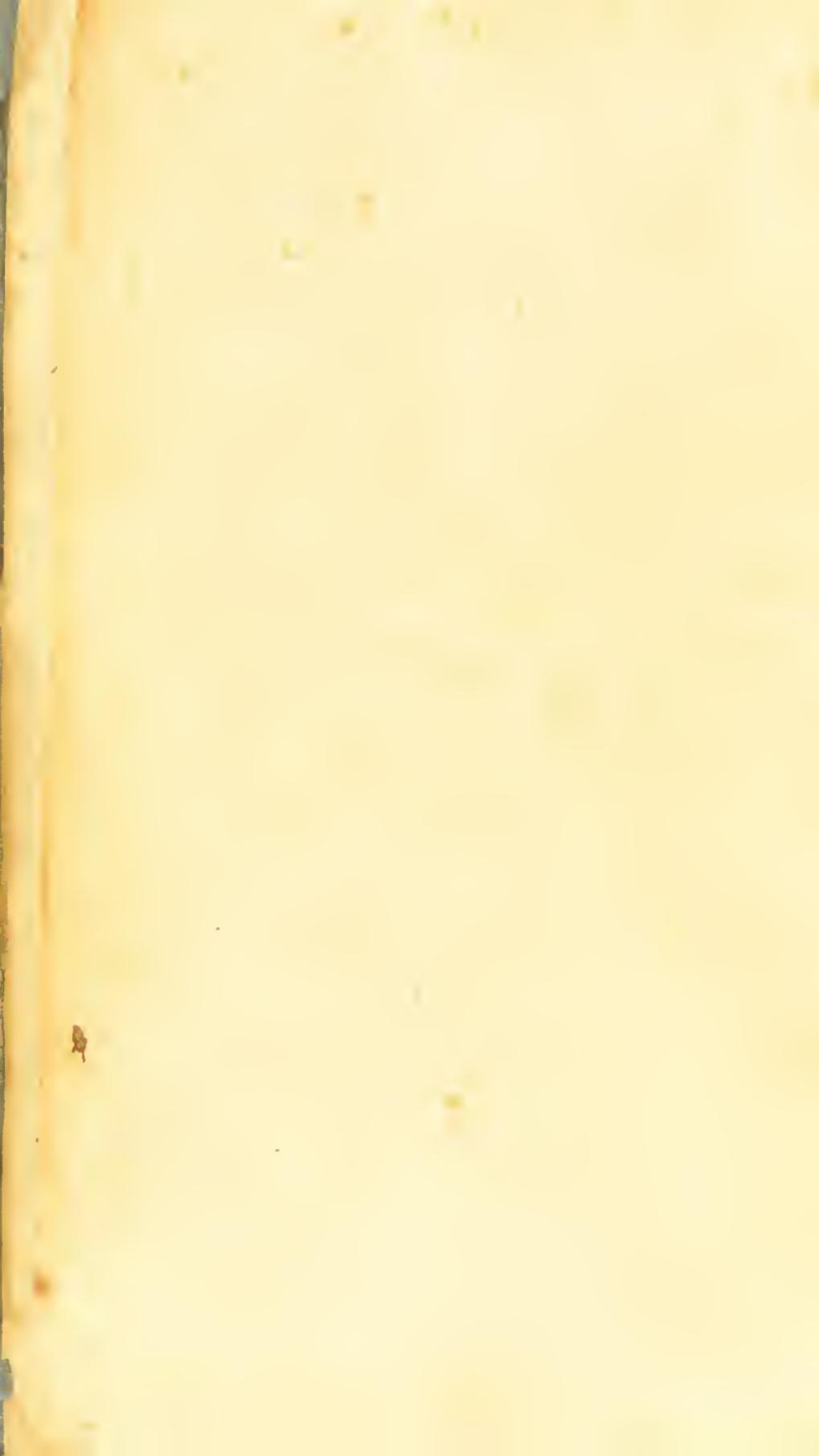




Fig. 5.



Fig. 12.



Fig. 11

THE

COMPLETE DISTILLER:

CONTAINING,

- I. The Method of performing the various Processes of Distillation, with Descriptions of the several Instruments: the whole Doctrine of Fermentation: the Manner of drawing Spirits from Malt, Raisins, Molasses, Sugar, &c. and of rectifying them: with Instructions for imitating, to the greatest Perfection, both the Colour and Flavour of French Brandies.
- II. The Manner of distilling all Kinds of Simple Waters from Plants, Flowers, &c.
- III. The Method of making all the Compound Waters and rich Cordials so largely imported from France and Italy; as, likewise, all those now made in Great Britain.

TO WHICH ARE ADDED,

ACCURATE DESCRIPTIONS

OF THE

Several Drugs, Plants, Flowers, Fruits, &c.,
used by Distillers;

AND

INSTRUCTIONS FOR CHOOSING THE BEST OF EACH KIND,

The whole delivered in the plainest Manner,

FOR THE USE BOTH OF

DISTILLERS AND PRIVATE FAMILIES

ILLUSTRATED WITH A PLATE.

By A. COOPER, DISTILLER

A NEW EDITION, ENLARGED.

LONDON:

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P R E F A C E.

It is now some years since I first formed a design of compiling a Complete System of Distillation; and accordingly read most of the treatises on that subject, and extracted from each what I thought necessary for my purpose, proposing to supply the defects from my own experience. It is, however, more than probable, that this design had never been executed, had not a *French* Treatise of Distillation fell into my hands; but finding in that book many useful observations, and a great number of recipes for making various sorts of compound waters and cordials, I determined to finish the work I had begun, being now enabled to render it much more useful than it was possible for me

otherwise to have done. What translated from this author, will say, be kindly received by our as the manner of making many o reign compound waters, &c. h before been published in the *Eng* guage. And, I flatter myself, if ral hints interspersed through this are carefully adverted to, Distilla be carried to a much greater d perfection than it is at present; celebrated compound waters and of the *French* and *Italians*, imp so great an expence, and such d to the trade of this nation, may in *England*, equal to those manu abroad.

My principal intention being t this Treatise useful to all, I have voured to deliver every thing plainest and most intelligible. Beauty of style is not, indeed, t

pected in a work of this nature; and, therefore, if perspicuity be not wanting, I presume the Reader will forgive me, if he meets with some passages that might have been delivered in a more elegant manner. I have also, for the same reason, avoided, as much as possible, terms of art, and given all the recipes in words at length.

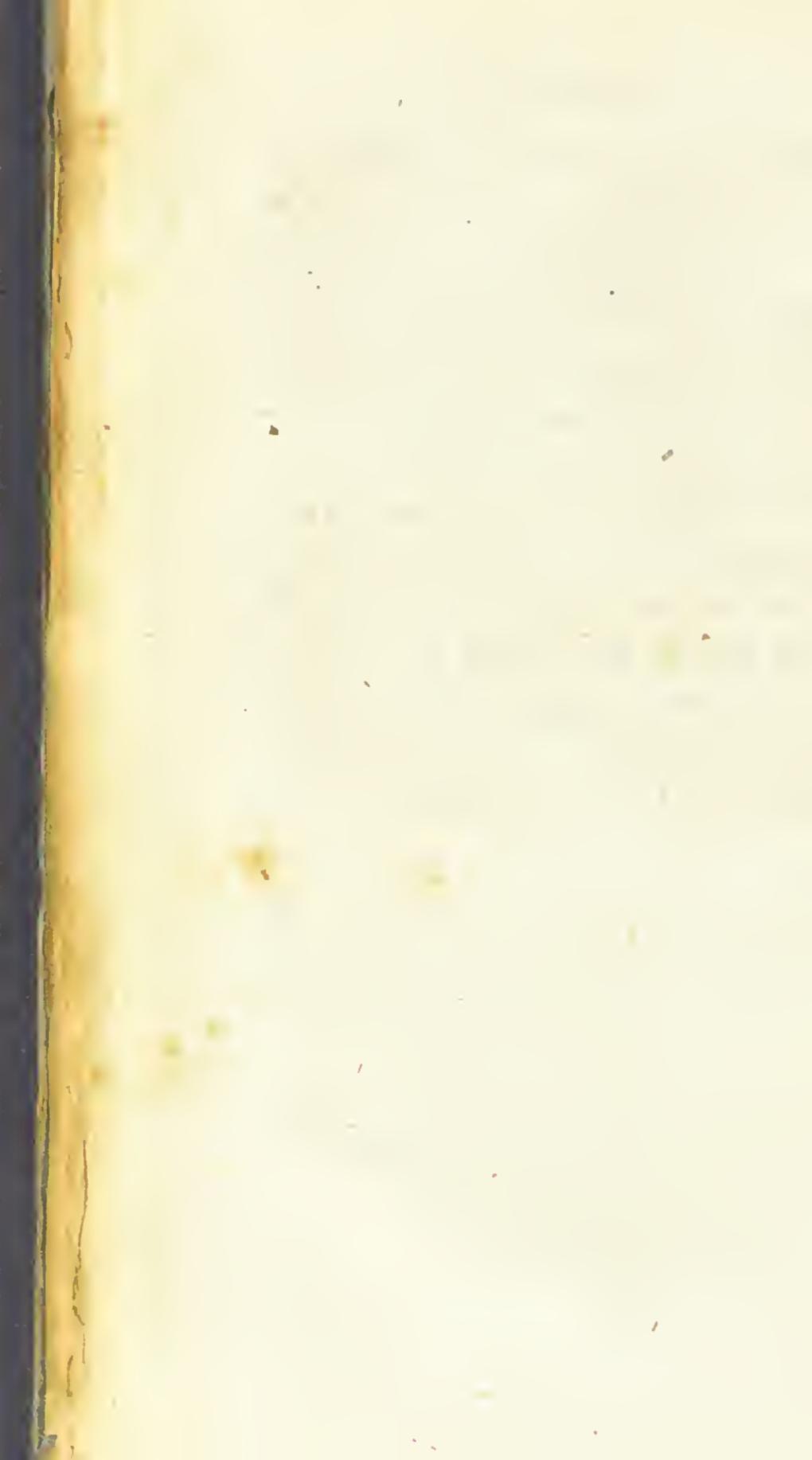
Distillation, though long practised, has not been carried to the degree of perfection that might reasonably have been expected. Nor will this appear surprising, if it be considered that the generality of distillers proceed in the same beaten track, without hardly suspecting their art capable of improvements, or giving themselves any trouble to inquire into the rationale of the several processes they daily perform. They imagine that the theory of Distillation is very abstruse, and above the reach of common capacities; or, at

least, that it requires a long and
sidious study to comprehend it;
therefore, content themselves with
ing the processes, without the least
tion. This opinion, however ridicu-
lous it may appear to those not acqua-
inted with the present practice of distille-
rers, I am satisfied, been the principal
why Distillation has not been carried
to the height it would otherwise have
been. I have, therefore, endeavoured in
the following Treatise, to destroy this idea-
tion, and shew the distiller how
to proceed on rational principles, and
to conduct his inquiries in such a manner as
not to fail of leading him to such discoveries
as will be attended with great ad-
vantage both to himself and his com-
munity.

But it is not to those only who
are engaged in the pursuit of
Distillation their profession, that
I have laboured to render this Treatise useful;
I have also endeavoured to extend its

to those who distill simple and compound waters for their own use, or to distribute to their indigent neighbours. And for this reason I have adapted most of the recipes to small quantities, and briefly enumerated the virtues and uses of each composition.

The short descriptions of the most capital ingredients, and the directions for choosing the best of each kind, I flatter myself, will not be considered as improper; because the goodness of every composition must in a great measure, depend on the goodness of the ingredients.



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A

COMPLETE SYSTEM
OR
DISTILLATION.

DISTILLATION is the art of separating, or drawing off the spirituous, aqueous, and oleaginous parts of a mixt body from the grosser, and more terrestrial parts, by means of fire, and condensing them again by cold.

We shall therefore divide this Treatise into three parts; in the first, we shall explain the method of distilling spirits from various substances; in the second, the manner of drawing simple waters; and in the third, the best methods of making cordial or compound waters.

B

PART

PART I.

OF THE DISTILLATION OF SPIRITS.

BY the distillation of spirits is to be understood the art by which all inflammable brandies, rums arracks, and the like are cured from vegetable substances, by means of a previous fermentation, and a treatment of the fermented liquor by a still, or hot still, with its proper worts and frigeratory.

But as it is impossible to extract the worts from any vegetable subject without fermentation, and previous to this, Brewing will be necessary, it will be requisite first to describe these operations.

C H A P. I.

Of Brewing, in order to the Production of Inflammable Spirits.

BY Brewing, we mean the extraction of worts from some vegetable substance, by immersing it in hot water, by which means it becomes proper for a vinous fermentation.

A solution, or fermentable tincture of this kind, may be procured, with proper management, from any vegetable substance, but the more readily and totally it dissolves in the fluid, the better it is fitted for fermentation, and the larger its produce of spirits. All inspissated vegetable juices therefore, as sugar, honey, treacle, manna, &c. are very proper for this use, as they totally dissolve in water, forming a clear and uniform solution; but malt, for its cheapness, is generally preferred in England, though it but imperfectly dissolves in hot water. The worst sort is commonly chosen for this purpose; and the tincture, without the addition of hops, or trouble of boiling it, is directly cooled and fermented.

But in order to brew with malt to the greatest advantage, the three following particulars should be carefully attended to: First, The subject should be well prepared; that is, it should be justly malted, and well ground: for if it be too little malted, it will prove hard and flinty; and consequently only a small part of it dissolve in the water: and, on the other hand, if too much malted, a great part of the finer particles, or fermentable matter, will be lost in the operation.

With regard to grinding, the malt is reduced to a kind of coarse meal; for it has shewn, that by this means, the substance of the malt may, through the process, continue mixed with the tincture distilled with it; whereby a larger spirit will be obtained, and also great trouble, time, and expence, in brewing. This secret depends upon thoroughly briskly agitating the meal, first in cold, and then in hot; and repeating the operation after the fermentation is finished: when the turbid wash must be immediately carried off into the still. And thus the two operations of Mashing and Fermenting may very conveniently be reduced to one, to the no small profit of the distiller.

The second particular to be attended to is, that the water be good, and propitious to the distillation. Rain water is the best adapted to this purpose; for it not only extracts the tincture of the malt more completely than any other, but it also abounds in fermentable parts, whereby the operation is speedily performed, and the yield of the spirit increased. Next to that of rain is the water drawn from lakes, particularly such as wash any

a fertile country, or receive the sullage of populous towns. But whatever water is used, it must stand in a hot state upon the prepared malt, especially if a clear tincture be desired : but the greatest care must be taken to prevent the malt from running into lumps or clods ; and, indeed, the best way to prevent this is to put a small quantity of cold water to the malt first, and mix them well together, after which the remaining quantity of water may be added in a state of boiling, without the least danger of coagulating the malt, or, what the distillers call, making a pudding.

It has been found by experience, that a certain degree of heat is necessary to extract the whole virtue of the malt ; this degree may, by the above method, be determined to the greatest exactness, as the heat of boiling water may at once be lessened to any assigned degree of warmth, by a proper addition of cold water due regard being had to the season of the year, and the temperature of the air. This improvement, with that mentioned above, of reducing the two operations of Brewing and Fermentation to one, will be attended with considerable advantage.

With regard to the proper quantity of water, it must be observed, that if too little is used, the viscid clammy mixture will be neither disposed to ferment, nor capable of extracting all the soluble parts of the malt. On the other hand, too much water renders the whole mass watery and aqueous, and by that means occasions trouble and expence in all parts of the process. A due medium, therefore, should be observed; and experience has shewn, that the quantity of water required for the London brewers for ten shilling beer, answer the distiller's purpose. When the quantity of water is mixed with the malt, the whole mass must be well agitated, so that the soluble parts of the malt may often come into contact with the aqueous fluid, which becomes saturated after standing a proper time. The liquid is then drawn off, fresh water poured on, and the operations repeated, till the whole vegetable mass loses its charine sweetness of the malt is entirely removed, and only a fixed husky matter remains, which is incapable of being dissolved by either hot or cold water.

The third requisite particular is, that certain additions be used, or altered according to the season of the year.

tention of the operator. The season of the year is very necessary to be considered. In the summer, the water applied to the malt must be colder than in the winter; and, in hot sultry weather, the tincture must suddenly be cooled, otherwise it will turn eager; and, in order to check the too great tendency it has to fermentation, when the air is hot, it will be necessary to add a proper quantity of unmalted meal, which being much less disposed to fermentation than malt, will greatly moderate its impetuosity, and render the operation suitable to the production of spirits, which by a too violent fermentation, would in a great measure be dissipated, and lost.

CHAP. II.

Of Fermentation.

THE tincture, or, as the distillers call it, the wash, being prepared as in the foregoing chapter, it is next to be fermented; for, without this operation, no vinous spirit can be produced.

By fermentation is meant that intestine motion performed by the instrumental efficacy of water, whereby the salt, oil, and earth of a fermentable

mentable subject, are separated, transposed, and again collected, and used in a particular manner.

The doctrine of fermentation, is of great use, and should be well understood by the distiller, as it is the very basis of the art; perhaps, if more attended to, a much greater spirit, as well as a greater quantity of spirit, might be procured from the same materials present. We shall therefore lay down a concise theory of fermentation, before we proceed to deliver the practice.

Every fermentable subject is composed of salt, oil, and a subtle earth; but these particles are so small, that, when asunder, they are not perceptible to the senses; and, therefore, when mixed with an aqueous fluid, they appear transparent; neither have fermentable subjects any taste, except that of sweetness.

These particles are each composed of salt, oil, and earth, intimately mixed in a certain cohesion, connexion, and union; so that, when any one of those principles much abounds in any subject, so that it

mate union is prevented, the whole efficacy of the fermentation is either stopped or impaired, or at least limited to one certain species.

This equal connection of salt, oil, and earth, into a single compound particle, forms a corpuscle soluble in water; or to speak more philosophically, this compound corpuscle is by means of its saline particles, connected with the aqueous corpuscles, and moved up and down with them. But where these corpuscles are not thus connected with the water, a number of them join together, and form either a gross, or a loose, chalcy, and spungy matter.

When these compound particles are diluted with a small quantity of an aqueous fluid, they feel slippery, clammy, and unctuous to the touch, and effect the taste with a kind of ropy sweetness. And when a proper quantity of the fluid is added, a commotion is presently excited, and afterwards a subtle separation.

This commotion and separation first begins in the whole substance; for before the addition of water, the subject may remain in dry, solid, and large pieces, as in malt, sugar, &c. which

being reduced to powder, each grain consisting of many smaller corpuscles; these being put into water, and separately float therein, till at length they become so small as to be invisible, and thicken the consistence of the liquor.

These corpuscles being thus separated from one another, there next ensues a separation of their component particles; that is, the oil, and the earth, are divided by the motion of the aqueous particles.

The first commotion is no more than a simple solution; for the saline particles being not dissolvable in water, they are immediately held in check by the aqueous particles, about with them. But the succeeding motion, or fermentative motion, is a very different thing; for by this the saline particles are separated from those of oil and earth, partly by the motion of the others in their motion, and partly by the force of the aqueous particles, which are continually meeting and dashing against them.

This motion is performed by the aqueous fluid, or aggregate of an infinite number of

ticles, in actual and perpetual motion ; their smallness being proportionable to that of the fermenting corpuscles, and their motion, or constant susceptibility of motion, by warmth, and the motion of the air, disposing them to move other subtle moveable corpuscles also. The certain agreement of figure, or size, between the aqueous particles, and those of the salt in the fermentable subjeet, tends greatly to increase this commotion ; for, by this meane, they are readily and very closely connected together ; and therefore move almost like one and the same compound corpuscle : whilst the water is not at all disposed to cohore immediately with either the oil or earth. And thus an unequal concussion is excited in the compound corpuscles of the fermentable subjeet ; which concussion at length strikes out the saline particle, loosens the others, and finally produces a separation of the original connexion of the subject.

An aqueous fluid, therefore, is the true, and indeed, the only instrument for procuring a fermentable motion in these compound corpuscles of the subjeet ; for were an oily fluid poured upon any fermentable subject, no vinous fermentation would ensue ; as the oil could neither

give a sufficient impulse on the compound corpuscles, which are grosser than its own minute particles, nor divide the oily particles of the subject from their own with the others, which detain, and, by an envelope or defend them from its action.

The compound corpuscles of the feverish subject being affected by the perpetually moving particles of the aqueous fluid, a proper degree of motion is necessary, or that the compound corpuscles move with a proper degree of velocity. This motion principally depends on external heat; a considerable degree of cold, indeed, will entirely prevent fermentation, though it greatly retard it; and a boiling heat will still more. A tepid, or middle degree, between freezing or boiling, is therefore the most proper for promoting and quickening the operation.

The admission of air, also, though not an absolute necessity, yet greatly promotes and quickens the action, as being a capital instrument for putting in a proper degree of motion into the particles of the subject. But whilst the air contributes to hasten the effect, it cannot

same time by its activity some remarkable alterations in the oily particles; for it not only moves, but absolutely dissolves and displaces them from their original connexions: and thus carries them off with itself from the whole mass. And, therefore, though the consideration of the air does not so properly belong to fermentation in the general, yet it does in particular; as having an accidental power to alter every species of this opération: consequently its agency ought to be well understood, either to procure alterations at pleasure in the fermenting mass, or to prevent and correct impending dangers.

The oily particles thus separated and dissolved by the air, are also elastic, though they probably derive that property from their intercourse with the air itself, and their being rendered extremely minute.

When, therefore, an aqueous fluid is added to a fermentable subject, exposed to a temperate heat, a fermentative struggle immediately arises, the saline part of the compound particles being dissolved by the continual intestine motion of the water, and carried up and down with it in all directions, amidst an infinite number of other

other particles, as well fermentable, as non-fermentable ones; whence, by this collision and attraction, the saline particles are dissolved and separated from their connexion with the oily and other particles. And as the oily particles are the most elastic, they would, by this means, rise up to the surface of the liquor, and if it were not for the attraction of the air, were they not closely connected with the earthy ones, whose gravity prevent their evaporation, and, by coming in contact with others of the same kind, form aggregates, which sink down with the oily particles to the bottom. But before these can form a mass too large to be supported by the water, many of the oily particles are, by their frequent collisions with the aqueous fluid, separated from the earthy ones: and by degrees, more strongly connected with the saline ones; whilst, on the other hand, the same saline particles imbibe the earthy ones, which being left single, are separated from the oily particles, and remain about separately in the fluid.

And hence proceed the several different sequences of fermentation; viz. 1. The separation of the saline particles of the liquor. 2. The separation of the oily particles, which, as before observed, proceed the tart, saline,

taste of the liquor; which is more sensible at first, before the liquor is duly composed and settled, or the due arrangement and connexion of the saline particles with those of the oily and earthy kinds, completed: after which the liquor proves milder, softer, or less pungent 2. From the oily particles being set at liberty, proceeds the strong smell of the liquor, and the head or shining skin upon the surface. 3. The earthy particles collecting together in clusters, cause the fluid to appear turbid, and afterwards a visible earthy, or clay-like matter to be precipitated: and some of the earthy parts, in their motion, arriving at the head, or oily skin on the surface, cause it to thicken; and afterwards taking it down along with it, thus constitute the lees which abound in oil. 4. From this new struggle or collision, which is productive both of solution, and a new connexion in the saline and earthy corpuscles, proceeds the ebullition in fermentation. And, lastly, by the same repeated coalition of the oily with the aqueous and saline particles the inflammable spirit is produced.

Having thus laid down a concise theory of fermentation, we shall now proceed to the practice.

The

The wash being brought to a tepid warm state in the backs, a proper quantity of good-conditioned ferment is added; if the ferment be solid, it should be previously broken into small pieces, and gently thinning it with the hand, wisp, &c. in a little of the liquor. A complete and uniform solution, however, should not be attempted, because it would greatly weaken the power of the ferment, or destroy its future efficacy. The proper quantity, therefore, being thus mixed with a moderate parcel of the liquor, it should be kept in a tepid state, either by setting it over the fire, or otherwise, and free from the rude commerce of the external air; for a sensibly warm liquor ought to be allowed proper intervals, till at length, the whole quantity is properly set to working together; and thus, by dividing the business into parts, it is performed much more speedily and effectually than if it were all at once formed, than by attempting it all at once.

The whole quantity of liquor being thus set to work, secured in a proper degree of heat, and defended from a too free intercourse with the external air, nature itself, as it were, finishes the process, and renders the liquor fit for

By ferment, we mean any substance, which, being added to any rightly disposed fermentable liquor, will cause it to ferment much sooner and faster than it would of itself; and, consequently, render the operation shorter; in contradiction to those abusively called so, which only correct some fault in the liquor, or give it some flavour. Hence we see, that the principal use of ferment is to save time, and make dispatch in business; whilst they only occasionally, and, as it were by accident, give a flavour and increase the quantity of spirit. And, accordingly, any fermentable liquor, may, without the addition of any ferment, by a proper management of heat-alone, be brought to ferment, and even more perfectly, though much slower, than with their assistance.

These ferment are, in general, the flowers and fæces of all fermentable liquors, generated and thrown to the surface, or deposited at the bottom, either during the act of fermentation, or after the operation is finished.

Two of these are procurable in large quantities, and at a small expence; we mean beer-yeast and wine-lees; a prudent and artificial management,

ment, or use of which, might render
of distillation much more facile, cer-
vantageous.

It has been esteemed very difficult
discouragement, in the business of
to procure a sufficient stock of these
and preserve them at all times re-
The whole secret consists in dexterously
the matter from its superfluous mo-
cause in its fluid state, it is subject to
fermentation, which is productive of
tion; in which state it becomes intol-
erableness and cadaverous.

The method of exposing it to the
has acquired a proper consistence, in
great inconveniences; and so peculi-
ar a management necessary, that it
ceeds.

The best way, therefore, is to press
slowly and gradually, in a thick,
strong canvas bag, after the man-
lees, by the tail-press, till it becomes
cake; which, though soft, will eas-
ily break dry and brittle between the fin-

ing reduced to that consistence, and closely packed up in a tight cask, it will remain a long time uncorrupted, preserve its fragrancy, and consequently, fit to be used for fermenting the finest liquor.

The same method is also practicable, and to the same advantage, in the flowers or yeast of wine; which may be thus commodiously imported from abroad: Or, if these cannot be procured, others of equal efficacy may be procured from fresh wine-lees, by barely mixing and stirring them into a proper warm liquor; whence the lighter, or more volatile and active parts of the lees, will be thrown to the surface, and may easily be taken off, and preserved, by the above-mentioned method, in any desired quantity. And hence, by a very easy process, an inexhaustible supply of the most useful ferments may be readily and successively procured, so as to prevent for the future all occasion of complaint for want of them, in the distiller's business.

Experience has demonstrated, that all ferments abound much more in essential oil, than the liquor which produced them: and, consequently,

quently, they retain, in a very high degree, the smell and flavour of the subject. It is therefore requisite, before the ferment is applied, to consider what flavour is intended to be imparted, or what species of ferment is most proper for the liquor.

The alteration thus caused by fermentation is considerable, as to render any neutral, or tasteless, liquor of the same flavour with that which yielded the ferment. This observation deserves much greater moment than will probably be conceived; for a new scene is hereby introduced both in the business of distillation, and of brewing, depending upon fermentation. It may, however, be observed, that its benefit does not extend to malt, treated in the common way, nor to any other subject but what is a spirit tolerably pure and tasteless: For, in this case, instead of producing a simple, uniform flavour, it causes a compound, and unnatural one. How far the fine artificer who profits by it, well deserves his attention, whether our native cyder spirit, crab-spirit, &c. which have very little flavour of their own, may not, by this artifice, be brought nearly, if not entirely, into the state of some foreign spirit.

so highly esteemed, is recommended to experience.

It is common with distillers, in order to increase the quantity of spirit, to give it a particular flavour, or improve its vinosity, to add several things to the liquor, during the time it is in a state of fermentation; and these additions may properly be reduced to salts, acids, aromatics, and oils.

All rich vegetable juices, as treacle, honey, &c. which either want a natural acid, have been deprived of it, or contain it in too small a quantity, will be greatly improved by adding, at the beginning of the operation, a small quantity of the vegetable or fine mineral acids; as oil of sulphur, Glauber's spirit of salt, juice of lemons, or an aqueous solution of tartar. These additions will either give, or greatly improve the vinous acidity of the subject, but not increase the quantity of the spirit, that intention being performed by aromatics and oils.

All pungent aromatics have a surprising quality of increasing the quantity of the spirit, as well as in altering, or improving the flavour; but

but their use requires that the fermentation should be performed in close vessels. A large quantity be intended to be added, it must be taken not to do it all at once, as the oiliness of the ingredients should check the fermentation. But if the flavour be the principal object, they should not be added till the fermentation is nearly finished. After the same manner, a considerable quantity of any essential oil may be converted into a surprising quantity of inflammable spirit; but great caution is here also necessary not to drop too much of the oil, or add too large a quantity at a time, as this would damp the fermentation; it is the surest method of checking, or totally stopping this operation, at any point of time. The best method, therefore, of adding oil so as to avoid all inconveniences, is to mix the oil in a mortar with sugar, which the distiller call making an *Olæsaccharum*, by which the tenacity of the oil will be destroyed, and it will readily mix with the liquor, and immediately ferment with it. The distiller would do well to consider these observations attentively, as he may thence form an advantageous method of increasing the quantity of spirits, and at the same time greatly improve their quality and

But in order to put these observations in practice, particular regard must be had to the containing vessel in which the fermentation is performed, the exclusion of the air, and the degree of the external heat or cold.

With regard to the containing vessel; its purity, and the provision for rendering it occasionally close, are chiefly to be considered. In cleansing it, no soap, or other unctuous body should be used, for fear of checking the fermentation; and, for the same reason, all strong alkaline lixiviums should be avoided. Lime-water, or a turbid solution of quick-lime may be employed for this purpose, without producing any ill effect; it will also be of great service in destroying a prevailing acetous salt, which is apt to generate in the vessels when the warm air has free access to them; and tends to pervert the order of fermentation, and, instead of a wine or wash, produce a vinegar. Special care must also be had, that no remains of yeast, or cadaverous remains of former fermented matters, hang about the vessels, which would infect whatever should be afterwards put into them; and cannot, without the utmost difficulty, be perfectly cured and sweetened.

The

The occasional closeness of the vessel, in the large way, be provided for, properly adapted; and, in the small vessels, placed in light casks. These occasionally give the necessary vent to the vessel, during the height of the fermentation; the vessel otherwise remaining close, and impervious to the air.

It is a mistake of a very prejudiced mind, in the business of fermentation, to suppose there is an absolute necessity for a constant admission of the external air. The expression is the truth, and very great advantages are found by practising according to this direction. A constant influx of the external air does not carry off some part of the spirit already generated, yet certainly catches up the fine, subtle, or oleaginous saline particles, whereof the spirit is thus considerably lessened. In close fermentation this inconvenience is avoided; all air, except that included in the vessel, being excluded. The whole secret consists in leaving a moderate space for the air above the liquor, unpossessed by the liquor. The liquor is once fairly at work to bury the yeast.

close, and thus suffer it to finish the fermentation, without opening or giving it any more vent than that afforded it by a proper valve placed in the cask ; which, however, is not of absolute necessity, when the empty space, or rather that possessed by the air, is about one-tenth of the gage ; the artificial air, generated in the operation being then seldom sufficient to open a strong valve, or at most not to endanger the cask.

This method may be practised to good advantage by those whose business is not very large ; but it requires too much time to be used by the large dealers, who are in a manner forced to admit the free air, and thus sustain a considerable loss in their quantity of spirit, that the fermentation may be finished in the small time allowed for that purpose. It may, however, be said, that the silent, slow, and almost imperceptible vinous fermentation, is universally the most perfect and advantageous.

During the whole course of this operation, the vessel should be kept from all external cold, or considerable heat, in an equal, uniform, and moderate temperature. In the winter, a stove room, such as is common in Germany, would be

very convenient for this purpose : being placed at a proper distance from the sun, so as to receive the heat of the sun, but at other seasons no particular care is necessary with us in England, if the sun's heat be well directed for the business be but well done, though the summer's heat, and the ill effects of the bleak northern winds.

The operation is known to be performed by the hissing, or small bubbling noise which is no longer heard, upon applying the ear to the vessel ; and also by the liquor itself appearing to the eye, and having a pungent smell, and taste to the tongue. And that it may fully answer its properties, and be well fitted to yield a perfectly vinous spirit by distillation, it should be suffered to stand at rest in a some what cool place, if practicable, than that in which it has been fermented ; till it has thoroughly digested, and cleansed itself of the gross lees, and become perfectly transparent, vinous and fragrant. In this state it should be committed to the alembic, where the spirit obtained will not only exceed that obtained in the common way in quantity, but also in fragrance, pungency, and vinosity.

C H A P. III.

Of Distillation in general.

HAVING in the two preceding chapters laid down the best methods of brewing and fermentation, we shall now proceed to the method of distillation.

And in order to lead our readers methodically through the path which lies before them, we shall begin with explaining the principles of distillation ; or, the method of extracting the spirituous parts of bodies.

To extract the spirits is to cause such an action by heat, as to cause them to ascend in vapour from the bodies which detain them.

If this heat be natural to bodies, so that the separation be made without any adventitious means, it is called fermentation, which we have already explained.

If it be produced by fire, or other heating power, in which the alembic is placed, it is cal-

led digestion, or distillation; digesting heat only prepares the materials for the separation of their spirits; and distillation is of sufficient efficacy to cause them to ascend in vapour, and distil.

This heat is that which puts the parts of a body, whatever it be, into motion, divides them, and causes a passage through its inclosed herein, by disengaging the phlegm, and the earthy particles which they are inclosed.

Distillation considered in this light, deserves worthy the attention and countenance of all who have learned. This art is of infinite extent; for whatsoever the whole earth produces, flowers, seeds, spices, aromatic and vulnerary drugs, odiferous drugs, &c. are its objects under its cognizance; but we generally confine it to liquids of taste and smell; and to waters and spirituous waters of aromatic and vulnerary plants. With regard to its utility, we shall omit saying any thing here, as we shall give sufficient proofs of it in the sequel.

C H A P. IV.

Of particular Distillation.

DISTILLATION is generally divided into three kinds; the first is called distillation *per ascensum*, which is, when the fire, or other heat, applied to the alembic, containing the materials, causes the spirit to ascend. This is the most common, and indeed almost the only kind used by distillers.

The second is called distillation *per descensum*; which is, when the fire being placed upon the vessel precipitates, or causes the spirit to descend. This kind is hardly ever used by distillers, but to obtain the essence or oil of cloves.

The third is termed distillation *per latus*, or oblique distillation; but this being used only by the chemists, we shall say nothing farther of it here.

With regard to the different methods of distillation, occasioned by the different vessels, or materials made use of to excite heat, improperly

called distillation; they are of various kinds, which shall be explained as they occur in the following pages.

There are various kinds of distillations, which arise from the different constructions of alembics; such are the distillation upon an alembic, with a refrigeratory apparatus; the alembic, the serpentine alembic, and others are produced from the heat of the alembic; such as the distillation of *Mariæ*, the vapour, the sand, the duveline baths.

These different methods of distillation will be explained in enumerating the operations, and they are most proper; and proceed to describe the different forms of alembics and their constructions.

CHAP. V.

Of Alembics, and their different Constructions.

THE Alembic is a vessel usually made of tin, and tinned, which serves for, and is essential to all the operations in the distillery.

There are several sorts of alembics, all different, either with regard to matter or form. As, the common alembic, with a refrigeratory, the earthen and the glass alembic, the *Balneum Mariae*, and the vapour-bath alembic.

Every one of these being of a different construction, are also used in different operations.

The common alembic consists principally of two parts, the lower part called the body, and the upper termed the head.

The body consists of two pieces, the lower called the cucurbit, and the upper the crown. The cucurbit, or lower part of the body, is a kind of receptacle proportioned to the size of the alembic, in which the bodies to be distilled are placed.

The crown, or upper part of the body, is also another part of the alembic; and is that part of the body to which the head is immediately luted. But an idea of these several alembics will be much better attained from the following figures, which represent them much stronger to the imagination than is possible to be done by words.

Fig. 1. Is a common alembic, before it is placed in a furnace, *a* the bottom, *b* the crown, *c* the head.

Fig. 2. Is the body without the rim or top of the crown where the *b* is.

Fig. 3. The head; *a* the rim which will be luted to the body; *b* the nose, *c* the worm which is luted into the *worm*.

Fig. 4. The worm, as it appears in the tub, in which it is fixed when the still is set up, *a* the end into which the still head is inserted, *b* the tube which conveys the liquor into the worm.

Fig. 5. Two stills at work in one distillery; *a, b* the two still heads, *c, d* the two stills closed in the brick-work, *e, f* the two still receivers, *g* the two condensers, *h*, a common receiver, called by chemists a *rating-glass*, used in the distillation of aromatic plants, in order to extract their essential oil, *i* a pipe for drawing the water out of the refrigerating tub.

Fig. 6. A small still with a refrigerating tub, *a* the body, *b* the head, *c* the refrigerating tub.

water, *d* the receiver, luted to the bec of the alembic.

Fig. 7. A glass alembic to be used as a *Balneum Mariae*; *a* the body, *b* the head, *c* the bec, which is to be luted to the receiver, *d* a trivet on which it is standing in the water.

Fig. 8. A proper receiver for the glass alembic, called by chemists a bolt head, or matrass.

Fig. 9. The glass alembic placed in a copper vessel; *a* the copper vessel filled with water, *b* the body of the glass alembic, *c* the head, *d* the receiver luted at *e* to the bec of the alembic.

Fig. 10. A cold still for distilling simple waters; *a* the head, *b* the bec, or nose, *c* the receiver, *d* the plate on which herbs are laid.

Fig. 11. A vessel for digestion, called by chemists a pelican or circulatory vessel; *a* the body, *b* the head, *c, c* two tubes, luted at *d*, *d* by which the liquor returns from the head into the body; *e* a furnace on which it is placed, *f* the fire-place, *g* the ash-hole.

Fig. 12. Another receiver used necessary to lute it to the end of order to prevent the most volatile being evaporated, and lost.

CHAP. VI.

Of the Accidents that too often happen forming the Processes of Distillation.

AMONG the accidents which happen in distilling, the least of operation to miscarry, and the ingredients lost.

And this being a subject of the greatest importance, we shall treat it with accuracy.

All accidents are occasioned by some primary cause; by want of attention, or by too much head, and fear often causes them to become irremediable.

The first accident which may happen is fire, is when a distiller, by too

causes the ingredients to be burnt at the bottom of the still; by this means his liquor is spoiled by an empereumatic taste, and the tin is melted off from the alembic. An empereuma resembles the smell of burnt tobacco, and is produced in liquors by too great a degree of heat. To illustrate this, distil any fruit, flowers, or any aromatic whatever: but especially something whose smell is very volatile, draw off only the best, unlute the alembic, and what remains in the still, will be found to have a very disagreeable smell; whence it follows, that if a little more had been drawn off, it would have spoiled what was before obtained.

If the fire be too violent, the extraordinary ebullition of the contents causes them to ascend into the head: and, if a glass alembic, they fall ignited into the recipient; the heat breaks it, the spirits are dissipated, and often take fire from the heat of the furnace.

If the fire be too strong, the bottom of the still becomes red hot, the materials inflamed, and consequently the fire reaches the recipient.

When an earthen alembic is used, the closest

attention is requisite to keep the fire ing the materials at the bottom, which is always of glass, bursts, and are spilt, and often catch fire. And becomes the more difficult, as earth fire much longer than a common al-

If the alembic be not firmly fixed, put out of order, falls down, and un thus the liquor is spilt, and the vap spirits on fire.

If all the joints be not carefully spirits at their first effort issue the least aperture, run into the fire, will be propagated into the alembic by the vap

In distillations where the phlegm first, its humidity penetrates the wood, loosens it, so that when the spiritu ascend, they are exposed to the sam

Lastly, when the recipient is unl cially if near full, without the great spection the spirits will be spilt, and the fire,

Hitherto I have only given a simple account of what daily happens to distillers; but the consequences of these accidents are infinitely more terrible than the accidents themselves; for an artist to lose his time, his labour, and goods, is no small matter: but it follows from what we have premised, that both his life and fortune are in danger from these conflagrations. Instances of the former are too common, as well as those of the latter, relating to the danger to which the operator is exposed. They are evident, and we have seen very lately three instances sufficient to intimidate the most sanguine. The spirits catch, the alembic and recipient fly, and the inflamed vapour becomes present death to all who breathe it.

The rectifiers, who perform the most dangerous operations of distillery, are particularly exposed to these terrible accidents; the fineness of the spirit, at the same time that it renders it more inflammable, also causes the fire to spread with the greater rapidity. And when their store-houses are once on fire, they are seldom or never saved.

Possibly I may be censured for my conciseness

ness on this head; indeed, the i
it requires the most particular di
intending to speak of the meth
prevent these accidents, I shall cl
ter with recommending the subje
serious reflection of all concerned
And it being hitherto omitted, t
others it requires the attention of
shall further observe, that they
should never be left to servants.
expected from ignorant persons? D
them, when the greatest presence
quisite.—Let us now proceed to
of preventing, or at least lessening

C H A P. VII.

Of the Methods of preventing

TO have informed the reader of
which happen in distilling, would
little consequence, without shew
same time, the methods of preve
In order, therefore, to fortify him
terror which the foregoing chapt
excited, we will here point out
for all the cases before specified.

To prevent accidents, two things especially must be known and adverted to.

1. The knowledge of the fire, which depends on the fuel, whether wood or coal.
2. The manner of luting so as to prevent the vapours from escaping through it, and by that means of setting the whole on fire.

The hardest wood generally makes the quickest fire, such as beech, oak, holline, elm, &c. The white woods, as the ash, the poplar, the willow, and the birch make a milder fire. This holds good also of the coal made of these two kinds of wood; and, consequently, the nature of the wood or coals must determine the fire, and the action of this must be proportioned to the effect intended to be produced by it. That is, the capacity of the alembic, the matters to be distilled, and their quantity. The same may also be said of pit coal, which is generally used in England.

It is evident, that the larger the alembic, the more fire is necessary. What has not been digested, also, requires more fire than that which has

has been prepared by that operation require a stronger fire than flowing on simple waters more thanous liquors.

The surest way of ascertaining degree of fire, is to regulate it by as they are more or less disposed spirits, &c. and this is done as operator must not leave the alembic tively listen to what passes within, begins to heat it. When the ebullition too vehement, the fire must be lessened by taking out some of the fuel, or with ashes or sand.

It requires a long experience in cases, before a distiller can acquire sufficient knowledge in this important point, to determine the degree of the quantity of fuel; judgment and experience, must supply this defect.

Every thing being determined with respect to the degree of fire, we shall now explain the method of luting alembics,

By the term luting an alembic, we mean the closing the joints through which the spirits might transpire.

Lute is a composition of common ashes, well sifted, and soaked in water; clay, and a kind of paste made of meal or starch are also used for this purpose; which, as I before observed, is to close all the joints, &c. in order to confine the spirits from transpiring.

Good luting is one of the surest methods of preventing accidents. An alembic, where all transpiration is prevented, having nothing to fear but the too great fierceness of the fire; and that may be regulated by the rules already laid down.

The refrigerating alembic is mostly used. The body and the head are joined to each other; but notwithstanding the greatest care be taken in luting the juncture, there will still be some imperceptible interstice for transpiration; and the least being of the greatest consequence, a piece of strong paper should be pasted over the joint, and the alembic never left till the spirits begin to flow into the receiver, in order to apply fresh paper, if the former should contract any moisture.

moisture. The master himself should attend to this, and whatever pots have been previously used, the eyes constantly upon it.

The alembic, when vinous spirit should be luted with clay, care round the junctures, in order to prevent transpiration; because the consequences are terrible; for when the fire is too strong, or quantity, it is often irretrievable. When this earth cracks in drying, it must be moistened, and fresh applied, on the first appearance of any occasion for it.

The retort is also luted with clay. When glass retorts are also used, they are often covered with the same clay, to prevent their melting by the intense heat of the fire.

Lastly, the earthen and glass vessels are luted with paper and paste as above. We have thus explained the great consequence of the care with regard to luting. Having now made a general review of the method of preventing them, and closed with a short observation on port-

which is, that alembics being never thoroughly secure on this kind of furnaces, a hook should be fastened to the refrigerant for fixing it to the wall.

C H A P. VIII.

Of the remedies for Accidents, when they happen.

NOTWITHSTANDING the best of rules, and the strictest observation, it is impossible entirely to prevent accidents, and, therefore, it is of no less importance to point out the remedies on those occasions.

The most essential are, courage and presence of mind ; fear only increasing the misfortune.

1. If the fire be too violent it must be covered, but not so as totally to prevent its action, as by that means the process of the distillation would be interrupted, and render it more difficult and less perfect.

2. When the ingredients burn, which you will soon discover by the smell, the fire must be immediately put out, in order to prevent the whole charge of the still being entirely spoiled,
which

which would otherwise inevitably
sequence.

3. If the spirits should catch fire,
care is to unlute immediately the
stop both the end of the beak and
receiver with wet cloths.

The fire must then be put out by
flame issued through the luting, the
be closed with a wet cloth, which
with water, should never be wanting
house.

4. If the alembic be of earth,
tents burn at the bottom, the fire
ately be put out, the alembic remem-
ber thrown upon it, till the danger
for farther security, covered with

5. If, after all your care in clo-
tures to prevent transpiration, you
thing amiss, while the spirits are
ply clay, or any other compos-
to stop the aperture, and have
cloth ready to stifle the flame,
should take fire.

6. If the heat detaches the lute, or it becomes moist, immediately apply another, having always ready what is necessary for performing it. Should the transpiration be so violent, that you cannot immediately apply a fresh lute, clap a wet cloth round the joint, and keep it on firm and tight, till the spirits have taken their course. But, if notwithstanding all your efforts, the transpiration should increase, so that you fear a conflagration, remove the receiver as soon as possible from the fire, and afterwards your alembic, if portable ; but if otherwise, put out the fire immediately.

7. The charge being worked off, be cautious in luting the receiver, that nothing be spilt on the furnace, and carry it to some distance from it, that the spirits exhaling may not take fire.

8. Lastly, observe that wherever a remedy is required, there must be no candle used ; for the spirituous vapours easily take fire, and propagate the flame to the vessels from whence they issue.

All that has been hitherto said, concerns only the management of the alembic ; but what remains

mains is still more interesting, those who work it, than they may be quering the accident, destroy the

On discovering any of the above symptoms, when the flame has not yet reached the operator, let the remedies already mentioned be used either with regard to the lute, or to the person exposed to the fire.

But if the flame has reached the operator, the following precautions are to be observed:

The operator must not approach the flame without a wet cloth over his mouth and nose, there being immediate death to inhaling the fumes and vapour.

In hastening to stop any accident, do not approach the side opposite to the flame; for, while you would be exposed to the heat, caution you would be involved in the smoke and vapour, not, without the utmost difficulty, to extricate yourself from it.

If, notwithstanding this precaution, the heat and smoke of the air should force the flame upon you, quit the place immediately, and

till its direction be changed, always taking care to have a wet linen cloth before your nose and mouth, and keep yourself on the side opposite to the direction of the flame; and also to have another such cloth, in order to smother the flame, and close the crevice through which the spirits issue.

Should it be your misfortune to be covered with inflamed spirits, wrap yourself in a wet sheet, which should be always ready for that purpose. Self-preservation is of too great importance that any of these precautions should be omitted in such variety of dangers.

If the fire has acquired such a head that it cannot be stopt, the receiver must be broke, and the alembic, if portable, thrown down; but no person must be suffered to go near them, especially those who are strangers to the business.

In a desperate case, like that of a large quantity of rectified spirit taking fire, if time permit, the communication of the beak of the alembic, with the recipient, which is usually a cask, must be cut off, by closely stopping the bung; and
be

be sure no candle come near the
ing the rest, as the danger would
to expose one's self to the flame
charge, and the distiller's safety si-
cipally considered.

I thought it my duty to give my
informations, and hope that in the
distillation, he will find them of
tage.

C H A P. IX.

On the Necessity of often cooling the alembic, and another Means of preventing

THE refrigerant is so essential
alembic, that for want of it sever-
dients are made use of to perform
cooling those whose capacity,
lastly, the construction, will not
having any.

The refrigerant is usually in pro-
capacity of the alembic; for which
ing may serve as a rule, that the
refrigerant should be to that of the
14 to 8.

The necessity of cooling the head of the alembic, is self-evident to all who have the least knowledge of distillation, as it condenses the spirits, cools them, and causes them to flow into the receiver, which, if of glass, would otherwise be broken by the heat; and consequently serves to prevent conflagrations.

The alembics of the *Balneum Mariae*, and the vapour bath, ought also to have refrigerants, like the common alembic, unless they are of glass.

Those of earth and glass are cooled, as we have already observed, with a wet cloth, which is also used to cool the head of other kinds of alembics. But it is not difficult to contrive one which may be placed in a refrigerant; such as the following.

To a common small still apply and lute a worm, or long tin, or pewter tube, forming several circumvolutions, of the same circumference with the body; in order to give it some elevation, place this worm in a refrigerant, proportioned to the alembic. If the capacity of this alembic should make it bear too much on the neck of the matrass, it may be supported by

a trevit of the same circumference itself: the extremity of the worm beak projecting beyond the side of the bant, for conveying the spirits into

This apparatus will be attended with less expence, will save the distiller the trouble of continually cooling the head of the worm, and is such a safeguard against accidents, that if the worm be well luted, nothing can apprehend but from the violence of the hand.

This method of practice, therefore, has three valuable particulars: the first is, that by cooling the spirits it preserves the receiver, and obviates the accidents arising from their heat. The second is, that the worm being kept in a moderate heat, the trade is less, and consequently the spirits acquire more taste, smell, and fragrance, than they would otherwise do.

Experience demonstrates, that when the spirits flow hot into the receiver, however expert the distiller may be to lute the worm, there will be a very strong separation, which, even in simple water, depreciates the goodness of the liquor.

Lastly, the third is, that the cooling of alembics is what principally contributes to the perfection of the operation; because the coolness of the head precipitates the phlegm, and in the case of too great a degree of fire, and where the ebullition is too vehement, if after taking away part of the fire, or covering it, the ebullition should continue, the head may be cooled with a wet cloth, till the ebullition is reduced.

As there is a necessity of cooling the alembic, so what we have said cannot be too carefully observed. In fine, the contrast of cold and heat, equally concurring, but by methods directly opposite, to the same process, and the perfection of the distillation, is a phænomenon, which deserves the attention of all who study the operations of nature.

CHAP. X.

Of the Necessity of putting Water into the Alembic, for several Distillations.

TWO principal advantages attend putting water into the alembic. The first is, to prevent the loss the distiller would incur without that precaution, and so prevent any alteration in the

liquor procured by distillation. To illustrate by an example. Suppose one should attempt to rectify spirits without putting water in the alembic, it is evident that the fire will consume part of the spirit entirely loss, because the same quantity cannot be procured from it, were there had been any thing to moderate the heat of the fire, which now preyed

SECONDLY, If liquors are impregnated with strong ingredients, especially seeing that the quantity be sufficient to absorb all the spirit, a great quantity of spirit must be left in the alembic, or the ingredients will burn, and the spirit contract an empyreumatic taste, which is very detrimental to the spirit, as it is increased by the heat.

THIRDLY, If no water be put in the alembic, with the ingredients, the spirit will be rendered finer by them, and the fire, if it be too strong, will cause the ingredients to burn, and the spirits to contract an empyreumatic taste. This fortune easily prevented by this pre-

Thus, it is a safe-guard against the burning of the ingredients, but besides, water being mixed with

dients, they are at once prevented from burning, and the spirit not weakened; for no sooner are the ingredients put in motion by the fire, than the spirits immediately ascend, and the liquor loses nothing of its quality; provided the receiver be removed as soon as the phlegm begins to ascend.

The water therefore prevents the waste of the spirits, and thus the distiller loses nothing of his goods; whereas, without water, the spirits by impregnating the materials, their quantity must be less. With regard to the phlegm, there is no difficulty in finding when it begins to ascend, the first drop being cloudy, and when it has continued dropping for some time, it is perceived by a milky cast at the bottom of the receiver.

LASTLY, The distiller is no loser with regard to the quality of his liquor, which is not at all weakened thereby. Thus it is attended with the two capital advantages, the profit of the distiller and the perfection of the liquor. Let us now proceed to the different manners of distillation.

C H A P. XI.

*Of the particular Advantages attending
Kind of Distillation.*

IN the third chapter we mentioned the different kinds of distillation; we shall here consider the particular advantages of each, according to the circumstances each is to be used.

In order for distillation, the alembic must be charged with materials, and placed over substances capable of producing the desired effect.

*The Method of distilling with
Refrigerant Alembic.*

This method of distilling is the most commonly used, being one of the most speedy and profitable, as it requires fewer preparations and less time.

To distil with the common alembic, the glass of it must be thoroughly cleansed, so as to have no smell of any preceding materials in it. The materials are then to be put in

bic; but care must be taken that the alembic be not above half full, in order that the materials may have sufficient room to move, without choking the neck of the alembic. The same care must be taken with regard to the head, it must be thoroughly cleansed and dried; for it often happens that some small quantity of water is left in the rim, which renders the first spirits foul, and, by endeavouring to separate it from the other, some, and that the most volatile part of the spirit, will be lost.

After this, the two parts of the alembic are to be carefully luted with strong brown paper, well pasted on, and the nose of the alembic luted to the worm; after which the fire should be immediately made under the still, lest too long an infusion should prejudice the liquor.

This alembic being worked on an open fire, the operation is quicker than any other; but the degree of fire requires a very close attention; as a different management is necessary to different materials. The water of the refrigeratory must be changed from time to time, and if the case requires it, the whole head, but especially the bec, must be kept cold.

*Of Distillation in Sand, and in
what should be used.*

This species of distillation is performed in two different manners. First, by heating the matter over a fire with sand or ashes, and placing the alembic over it. This method is very negligent, and for the perfect rectification of spirits. Sand is absolutely necessary for regulating the action of the fire, when the heat is too strong; and it is necessary to fear the matter contained in the alembic will burn.

The second method of sand distillation is to take the finest river sand, and after washing it, put into the alembic a quantity sufficient to cover it three fingers deep. The still is to be charged with the matter to be distilled. This serves instead of a receiver in certain cases, where the use of it would damage the ingredients; as in the fine spirit impregnated with the aromatic parts of plants, the sand preventing the ingredients from being burnt. It is also necessary in distilling spirits from seeds.

This operation being finished, the sand must be thoroughly cleansed from the

the taste or smell contained therein, be not communicated to any other charge of different ingredients.

Of distilling in Balneum Mariæ, and its Advantages.

This method of distillation is of great use in several cases. Its operation is more perfect, and is subject to few; if any of those accidents attending distillations on an open fire.

In distilling sweet scented waters from flowers, aromatic plants, and others of that kind, where neither water, nor spirit ought to be mixed with them, there is an absolute necessity for using the *Balneum Mariæ*; as by every other distillation, on an open fire, the ingredients would infallibly burn.

If sand should be made use of, the fire would melt the tin from the alembic, and the contents be in the utmost danger of being burnt.

In distilling in *Balneum Mariæ*, a glass alembic is generally used. This alembic is to be placed in a copper vessel filled with water. This vessel ought at least to be of half the height of the

alembic: at the bottom of the copper vessel there must be a trivet on which the alembic is to stand, so that it may not touch the bottom of the vessel; because when the water begins to boil, it will disperse itself towards the sides, and if the bottom were dry, the ingredients would be exposed to the danger of burning.

The use of the *Balneum Mariae* is not to be recommended for those ingredients which require a slow distillation; but if a copper alembic be used, be sure to lay a layer of sand at the bottom, that the distilled water may not contract any ill taste or smell. It is also adviseable in the rectification of spirituous liquors, on account of the danger attending the operation, when performed on a naked fire.

Were this method of distillation to be adopted, it would be less tedious than that performed on a naked fire; and therefore ought to be used, because it is subject to fewer accidents, and at the same time the spirit distilled is much more fragrant and agreeable.

In what cases Glass, or Earthen Alembics are to be used; their Advantages and Disadvantages.

In the chapter relating to accidents, we have mentioned the earthen alembic;

add, that it ought never to be used, except the matter to be distilled have a strong and bad smell, and then seldom above once, unless it be for ingredients of the same or similar qualities.

This alembic being very difficult to be managed, we can only recommend it in the case above-mentioned.

As a naked fire is generally applied to this alembic, it requires a furnace where the fire may be gradually increased, on account of the accidents to which it is liable.

The glass alembic is more easily managed, as it is generally placed in a *Balneum Mariæ*. Its principal use is for distilling waters from flowers, and making quintessences; and were it not for the length of the operation, it would be preferable to any other method.

This alembic hardly admitting of a refrigerant, a wet linen cloth must be placed on the head, and often changed.

The receiver of this alembic must not be very large, because of the fragility of the bec; but if it were ever so little bent into a curve, the

Largeness of the receiver would be
dice; because then its whole weight
supported by its stand.

*Advantages of Distillation performed
in a Vapour Bath.*

This method differs very little from
Balneum Mariæ, and is used nearly
circumstances; but has greatly the
of the *Balneum Mariæ* in the quiet
operation. And LEMERY, in the
his course of chemistry, affirms it
be more perfect.

However that be, its use is equal
the *Balneum Mariæ*; but in distilling
scented waters, or flowers, sand must
at the bottom, that the liquor may
a taste from the copper.

*Cases where Dung, Husks of Grapes,
are to be used.*

These substances are rarely used
digestions; and therefore of no
distillers, they using only hot air
well covered for that purpose.

If dung be used, it must be of the hottest kind, viz. that of the horse or sheep, and the quantity proportioned to the heat intended. The lime must be quick; and if the heat required be moderate, lime which has lain some time in the air, must be used. The same is to be observed with regard to the husks of grapes. But in whatever manner these are used, the digestions must be performed in a close covered vessel.

C H A P. XII.

Of Bodies proper for Distillation.

THIS chapter alone might make a volume, were we to make a particular enumeration of all its parts; but, as we have already observed, we shall confine ourselves to the distillation of simple and compound waters.

If we acquit ourselves to the satisfaction of the publick, we shall enjoy the pleasure of having treated of one part entirely new; and, indeed, the only one that has been overlooked.

The bodies proper for distillation, are flowers, fruits, seeds, spices, and aromatic plants.

By

By distillation and digestion, we extract the colour and smell of flowers in simple water, and essences.

We extract from fruits, at least their colour, taste, &c.

From aromatic plants, the distilled spirits, essences, simple and compound essences.

From spices are procured essences, language of the chemists, oils and perfumes, and also pure spirits.

From seeds, or berries, are drawn waters, pure spirits; and from some, anise, fennel, and juniper, oil.

The colour of flowers is extracted by distillation, and likewise by digestion in brandy, or wine: the smell is extracted by digestion in simple water with brandy, or spirit of wine.

What is extracted of the colour of flowers by infusion in water by a gentle heat, or by digestion in brandy, or spirits of wine, is called by the distiller's phrase, tincture of flowers.

The colour of fruits is extracted in the same manner, either by infusion or digestion: their taste is also procured by the same processes. But let it be observed, that the time of these operations must be limited; for otherwise the fruit, after fermentation, would render it acid. The taste is also extracted by distillation in spirit of wine.

From aromatic plants, are extracted by the alembic, pure spirits, odours, and simple waters. But these require different methods of distillation. The first by water, or brandy only, the second by rectified spirit, which will give them the greatest excellency they are capable of.

The plants themselves with their flowers may also be distilled, which is still better.

From spices are drawn spirits, and oily, or spirituous quintessences. The spirits are drawn by brandy, or spirit of wine, with very little water: the oils are distilled *per descensum*; and the spirituous quintessences by pounding the spices, and after infusing them in spirit of wine, decanting it gently by inclination,

From

From seeds are extracted simple spirits, and oils; very few of the first spirits being what is generally extracted from seeds and berries.

Some distillers, through a notion of safety, distil seeds with water; but their liquors are not to be compared with those which are distilled with spirits. When oils are drawn from seeds, the operation is performed either in a *neum Mariæ*, or the vapour-bath.

We only deliver in this place, the particulars of each of these operations; they will be further illustrated in the sequel. We shall treat more particularly of these subjects in another chapter.

C H A P. XIII.

Of what is procured by Distillation.

BY Distillation are procured spirituous waters, simple waters, and phlegm.

Spirits are very difficult to be defined; we may consider them as the most subtle and volatile parts of a body.

All bodies without exception yield spirits more or less.

These parts are an ignited substance, and consequently by their own nature disposed to a violent motion.

These volatile particles are more or less disposed to separate themselves, as the bodies are more or less porous, or abound with a greater or lesser quantity of oil.

By the term essence, we understand the oleaginous parts of a body. An essential oil is found in all bodies, being one of their constituent principles. I have observed in all my distillations, spirit of wine excepted, a soft unctuous substance floating on the phlegm; and this substance is oil, which we call essence; and this is what we endeavour to extract.

Simple waters are those distilled from plants, flowers, &c. without the help of water, brandy, or spirit of wine. These waters are commonly odoriferous, containing the odour of the body from whence it is extracted, and even exceeds in smell the body itself.

Phlegm is the aqueous particles of bodies; but whether an active or passive principle, we shall leave to the decision of chemists.

It

It is of the last importance to a distiller to be well acquainted with its nature ; making for phlegm several white and clear drops which first fall into the receiver, when the heat begins to work. These, however, are the most spirituous particles of the matter in the alembic, and consequently ought to be avoided. What has given occasion to this mistake, is some humidity remaining in the apparatus &c. of the alembic. And had it been perfectly wiped, the first drops would have been perfectly bright with any during the whole process.

The following remark deserves attention. In bodies that have been digested, the volatile parts ascend first : whereas in charges not so digested, the phlegm ascends before the volatile parts. The reason of this is very plain and natural.

In substances previously digested, the heat of the fire no sooner causes the volatile parts to move in the alembic, than the spirits, being more volatile parts, detach themselves, and ascend through the tube, and pass over the head of the alembic. But when the substance to be distilled has not undergone a previous digestion, the spirits being entangled in the mass, are less disposed to ascend, till the mass is separated, and gives them room to fly.

The phlegm being aqueous rises first: this is more particularly observable in spices. I am, however, inclined to believe, that were the operation performed in an alembic, whose head was at a greater distance from the surface of the charge, they would not ascend high enough to come over the helm, but fall back again by their own gravity, and by that means leave the spirits at liberty to ascend. But in the common refrigeratory alembic this always happens.

If this observation be not readily admitted, I appeal to experience, which I desire may be the test of every thing I shall advance.

Another observation, which has verified the above assertion by innumerable instances, is, that in an extraordinary run of business, when I had not time sufficient to digest the substances, I used to bruise them in a mortar; but notwithstanding the trituration, the phlegm first came over, and afterwards the spirits. But I desire to be understood, that I speak here only of the volatile parts of the plants not drawn with vinous spirits, but contained in a simple water.

Another remark I must add, and which I hope will be acceptable to the curious, as it has not yet

yet been made public, though do-
servation has often occurred to ob-
serve that in mixed charges, consist-
ing of flowers, fruits, and aromatic plants, put in
without a previous digestion, the
flowers ascend first; and notwithstanding
the mixture, they contracted nothing
of the taste or smell of the fruits and plants. If
the spirits of the flowers, those of the fruits
not in the least impregnated with
taste of either of the flowers or plants.
In the last place, the spirits of the plants
less neat than the former. Should
it be strange to any one, experience
him of the truth.

Another observation I have made
on aromatic herbs, is, that whether they are
digested; whether the spirits or plants
ascend first; the spirits contain very little
and smell of the plants from whence
extracted; and I have always been
put to these spirits a greater or less quantity
of the phlegm, in order to give
it the taste of an aromatic plant,
the plants; the phlegm containing
a quantity of both.

This observation I insert as of great use to those who practice distillation.

As the term digestion often occurs in this essay, I cannot avoid pointing out its advantages, and even shew the necessity of using it in several circumstances.

Substances are said to be in digestion, when they are infused in a menstruum, over a very slow fire. This preparation is often necessary in distillation ; for it tends to open the bodies, and thereby free the spirits from their confinements, whereby they are better enabled to ascend.

Cold digestions are the best ; those made by fire, or in hot materials, diminish the quality of the goods, as some part, as the most volatile, will be lost.

In order to procure essences, the bodies must be prepared by digestion. It is even of absolute necessity for extracting the spirits and essences of spices.

CHAP. XIV.

Of the proper Season for

FLOWERS of all kinds must have their proper seasons. To begin with, its colour and smell can only be perfectly known when it is in its greatest vigour, which is not at its first appearance, nor when it begins to decay. *April* is the month in which it is in its greatest perfection; the season being nearly equinoctial, and the flowers in *March*, as to give the violet its greatest fragrance.

The same must be observed in gathering flowers. And let them be gathered in the hottest time of the day; the odour and fragrance of flowers being then in their greatest perfection.

The same observation holds good also in regard to fruits; to which must be added, that they are the finest, and of the best colour, especially those from which no insects are drawn: they must be free from worms, as the goods would by that means be corrupted and disfigured.

Berries and aromatics may be distilled at any season, all that is necessary being a good choice. But in this distillers are sometimes mistaken, as may easily happen without a very accurate knowledge. We shall therefore, in the sequel, lay down more particular directions for making a proper choice of materials.

C H A P. XV.

Of the Filtration of Liquors.

FILTRATION consists in passing liquors through some porous substance, in order to free them from those particles which obscure their brightness.

Nothing is finer than a liquor newly distilled; but the syrup and colouring particles render it thick and opaque; in order, therefore, to restore their brightness, they are filtrated, which is done by passing them through sand, paper, cloth, &c.

All the attention of the distiller cannot, in ordinary operations, always prevent some aqueous particles from rising with the spirits, either

in the beginning of the process positions where they ascend first clusion when they rise last. A unavoidable, so it it also someti

In distilling flowers, or aromatic gathered, the phlegm rises first cannot be taken out of the receiver priving the spirits of a considerable fragrancy.

In distilling spices, their odors entangled, will remain in the air of the phlegm is drawn off. But of these substances, their quintessence the necessity ceases. But the phlegm, by causing a cloudiness in the liquor, rendered tolerably fine, by pouring it by inclination, without the trouble the aqueous particles, by their gravity, to the bottom. But to render it entirely fine, put some cotton in a funnel, and let the liquor through it, by which means the particles will be retained in the funnel; but one must however remember to cover the funnel, to prevent the most volatile spirits from evaporating.

CHAP. XVI.

Of the Distillation of Malt Spirits.

THE wash, or liquor, being prepared by brewing and fermentation, as directed in the first and second chapters of this treatise, the still is to be charged with it, and worked off with a pretty brisk fire. But it should be observed, that the only apparatus used in this process, is the alembic with a refrigeratory, as represented in *Fig. 1.*

The wash being of a mucilaginous nature, a particular management is necessary to prevent its burning, and cause it to work kindly in the still: if it should happen to be burnt in the operation, the spirit will have a most disagreeable flavour, which can hardly ever be removed; and therefore to prevent this ill effect, the wash should be made dilute or thin, the fire well regulated, and the whole kept in a continual agitation during the whole process. The most judicious distillers always take care to have their wash sufficiently diluted, and constantly find their spirit the purer for it. With regard to the fire, it may be easily kept regular, by a constant attendance, and observing never to stir it

hastily, or throw on fresh fuel; and of the liquor in the still is to be means of a paddle, or bar kept in till it just begins to boil, which is luting on the head; and after which great danger, but from the improvement of the fire: this is the common it is no easy matter to hit the exact doing it either too late, or too soon with great inconvenience, so that discovered other methods; some p bodies into the still with the wash; some proper matter at the bottom of the still, which are the places where acts with the greatest force.

The use of the paddle would, however better than either of these methods, if it be continued during the whole time the still is working; and this may be done by the following method: let a short tube of copper be soldered in the centre of the still; let a close bar be placed below in the tube, with a hole in the middle, corresponding at the top; through both these, let a rod be carried down in the still, and let a pipe be passed through this with wooden stoppers at each end; this rod may be continually

winch at the still-head, and the sweeps will continually keep the bottom and sides scraped clean, the interstices of the tube being all the time well crammed with tow, to prevent any evaporation of the spirit.

The same effect may, in a great measure, be produced by a less laborious method, namely, by placing a parcel of cylindrieal sticks lengthways, so as to cover the whole bottom of the still, or by throwing in a loose parcel of faggot sticks at a venture ; for the action of the fire below moving the liquor, at the same time gives motion to the sticks, making them act continually like a parcel of stirrers upon the bottom and sides of the still, which might, if necessary, be furnished with buttons and loops, to prevent them from starting. Some also use a parcel of fine hay laid upon the loose sticks, and secured down by two cross poles, laid from side to side, and in the same manner fastened down with loops. Care is to be taken in this case, not to press the hay against the sides of the still ; for that would seorch nearly as soon as the wash itself; but the sticks never will : these are simple but effectual contrivances, and in point of elegance, they may be improved at pleasure.

There is another inconvenience in distilling of malt spirit, which is bottoms, or gross mealy scumulence in the still along with the liquor, the scum of the wash going off in form of a mealy mass grows by degrees more stiff; so as to scorch towards the end of the operation. The best method of avoiding this, is to have a pipe with a stop-cock, from the upper part of the worm of the still; so that upon a half, or a quarter of an hour, may continually supply a little strong water, in the same proportion as the wash goes off, by which means the danger of scorching is avoided, and the operation, at the same time, not in the least retarded.

In *Holland*, the malt distillers wash their stills very thick, with the whole body of water; yet they are so careful in keeping them clean, and so regular and nice in the management of their fires, that though they take no care to extinguish the fire at all on this head, only to change it when it is hot and moist, they very seldom suffer the misfortune to scorch, except now and then in the depth of winter. When such an accident has once happened in a still,

tremely careful to scrape, scrub, and scour off the remains of the burnt matter, otherwise they find the same accident very liable to happen again in the same place. But beyond all the other methods in use on this occasion, would be the working the stills not by a dry heat, but in a *Balneum Mariae*, which might possibly be so contrived by the basin being large, and capable of working a great many stills at once, as to be extremely worth the proprietor's while in all respects.

Another requisite to be observed is, that the water in the worm-tub be kept cool; this may be effected, by placing in the middle of the tub a wooden pipe or gutter, about three inches square within, reaching from the top almost to the bottom; by this contrivance cold water may, as often as necessary, be conveyed to the bottom of the worm-tub, and the hot water at the top forced either over the sides of the tub, or, which is better, through a leaden pipe of moderate size, called a waste-pipe, soldered into the top of the tub, and extended to the gutter formed to carry away the water.

CHAP. XVII.

Of the Distillation of Molasses.

THE spirit distilled from molasses is very clean or pure. It is made like common treacle dissolved in water, and in the same manner as the wash of common malt spirit.

But if some particular art is not used in distilling this spirit, it will not prove like common malt spirit, but more flat and less brisk, though otherwise much clearer. Its essential oil is of a less offensive smell. Therefore, if good fresh wine lees, or tartar, be added and duly fermented with the molasses, the spirit will acquire greater vinosity and briskness, much nearer to the nature of fine malt-spirits.

Where the molasses-spirit is not of common proof strength, if it be not to have a sufficient vivacity, it will be necessary to add some good dulcified spirit of wine. If the spirit be clean worked, it may be

tion only, be made to pass on ordinary judges for *French* brandy.

Great quantities of this spirit are used in adulterating foreign brandy, rum, and arrac. Much of it is also used alone, in making cherry-brandy, and other drams by infusion ; in all which many, and perhaps with justice, prefer it to foreign brandies.

Molasses, like other spirits, is entirely colourless, when first extracted ; but distillers always give it, as nearly as possible, the colour of foreign spirits ; the methods of performing which, we shall explain in a subsequent chapter.

C H A P. XVIII.

Of the Nature of Brandies, and Method of distilling them in France.

THE general method of distilling brandies in *France* need not be formally described, as it differs in nothing from that commonly practised here in working from wash or molasses ; nor are they in the least more cleanly, or exact in the operation.

They only observe more prudence than to throw a little of the natural juice along with the wine, as finding it gives spirit the flavour, for which it is esteemed abroad.

But though brandy is extracted from all kinds of grapes, experience tells us, that there is a difference in grapes from which the best brandy is made. Every soil, every climate, every kind of grape varies with regard to the quantity of spirits extracted from them. There are grapes which are only fit for eating, and others for drying; as those of *Damascus*, *Constantinople*, *Aix-en-Provence*, and *Avignon*; but not fit to be distilled.

Some wines very proper for distillation, are much less so. The wines of *Lyon*, *Paris*, *Poitiers*, *Providence* afford a great deal of brandy by distillation, when the operation is carried on with full strength: the *Orleans* wines, and those of *Blois* afford yet more; but the best brandy is made of the territories of *Cognac* and *Gascony*, which are, however, in the number of them, least drank in France. Whereas the wines of *Grenoble*, *Angouleme*, *Gundy* and of *Champaigne*, though they have a fine flavour, are improper, because they contain but very little in distillation.

It must also be farther observed, that all the wines for distillation, as those of *Spain*, the *Canaries*, of *Alicant*, of *Cyprus*, of *St. Peres*, of *Toquet*, of *Grave*, of *Hungary*, and others of the same kind, yield very little brandy by distillation; and consequently would cost the distiller considerably more than he could sell it for. What is drawn from them is indeed very good, always retaining the saccharine quality, and rich flavour of the wine from whence it is drawn; but as it grows old, this flavour often grows aromatic, and is not agreeable to all palates.

Hence we see, that brandies always differ, according as they are extracted from different species of grapes. Nor would there be so great a similarity as there is between the different kinds of *French* brandies, were the strongest wines used for this purpose: But this is rarely the case, the weakest and lowest flavoured wines only are distilled for their spirit, or such as prove absolutely unfit for any other use.

A large quantity of brandies is distilled in *France*, during the time of the vintage: for all those poor grapes that prove unfit for wine, are usually first gathered, pressed, their juice fer-

mented, and directly distilled. They lay by their poor wines at once in their casks empty for the reception of brandies. It is a general rule with them not to lay by any wine that will fetch any price as it is in this state, the profits upon them are greater than when reduced to brandies. They have a stock of small wines, with which they are most overrun in France, sufficient for their making such vast quantities. They lie in warmer climates, and are adapted to the production of grape brandy.

Nor is this the only fund of the English for all the wine that turns eager to be distilled to the still; and, in short, they can neither export, nor consume at home, amounts to a large quantity; since they lay in for their family provisions, as not to keep during the time in

Hence, many of our English, by proper management, are convertible into brandies, that shall hardly be distinguished from foreign, in many respects, provided that the distillation be neatly performed. And, in particular, a cyder spirit, and a crab spirit.

from the first extraction, be made to resemble the fine and thin brandies of *France*, we would recommend to those distillers, whose skill and curiosity prompts them to undertakings condemned by those who only work mechanically, and scorn to deviate from the beaten tract, though they have the fairest prospect of acquiring profit to themselves, and a lasting emolument to their country.

C H A P. XIX.

Of the Distillation of Rum.

RUM differs from what we simply call sugar spirit, as it contains more of the natural flavour, or essential oil, of the sugar cane : a great deal of raw juice, and even parts of the cane itself being often fermented in the liquor, or solution, of which the rum is prepared.

Hence we see from whence rum derives its flavour; namely, from the cane itself. Some, indeed, are of opinion, that the unctuous or oily flavour of the rum proceeds from the large quantity of fat used in boiling the sugar. This fat, indeed, if coarse, will give a stinking flavour to the spirit in our distillations of the sugar

liquor, or wash, from our refining sugar; but this is nothing like the flavour which, as we have already observed, is the natural flavour of the cane.

Great quantities of rum are made in *Barbadoes*, *Antigua*, and other islands. The method of making it is this:

When a sufficient stock of the molasses is collected, they add water to them, and boil them in the common method, though fermentation is always carried on very slowly at first; because at the beginning of the operation, for making rum in the islands, they add some yeast, or some other ferment to make it ferment more quickly; after this, they, by degrees, procure a small quantity of the ferment, which they add to the liquor in the operation, till they are able afterwards to ferment their rum with a great deal of expeditiousness, in very large quantities.

When the wash is fully fermented, and has a sufficient degree of acidity, the distillation is performed in the common way, and the spirit is brought to proof; though sometimes it is reduced to a lower proof.

much greater degree of strength, nearly approaching to that of alcohol, or spirit of wine; and it is then called double distilled rum.

It would be easy to rectify the spirit, and bring it to a much greater degree of purity than we usually find it to be of; for it brings over in the distillation a large quantity of the oil; and this is often so disagreeable, that the rum must be suffered to lie by a long time to mellow before it can be used: whereas, if well rectified, its flavour would be much less, and consequently much more agreeable to the palate.

The best state to keep rum, both for exportation, and other uses, is doubtless that of alcohol, or rectified spirits. In this manner, it would be contained in half the bulk it usually is, and might be let down to the common proof strength with water when necessary: for the common use of making punch, it would likewise serve much better in the state of alcohol; as the taste would be cleaner, and the strength might always be regulated to a much greater degree of exactness than in the ordinary way.

If the business of rectifying rum was more nicely

nicely managed, it seems a very
scheme to throw out so much of
reduce it to the fine light state of
but lightly impregnated with the
state it would nearly resemble arrac
proved by mixing a very small q.
with a tasteless spirit; for it then
near resemblance to arrac in flavor.

CHAP. XX.

Of Sugar-Spirit.

WE mean by a sugar-spirit, the
from the washings, scummings, dross
of a sugar-baker's refining-house.

These recrementitious, or drossy
sugar, are to be diluted with water
in the same manner as molasses
then distilled in the common method;
the operation be carefully performed,
spirit well rectified, it may be mixt
reign brandies, and even arrac in
portion, to great advantage; for it
be found superior to that extracte
cle, and consequently more prop
uses.

CHAP. XXI.

Of Raisin-Spirits.

BY raisin-spirits, we understand that extracted from raisins, after a proper fermentation.

In order to extract this spirit, the raisins must be infused in a proper quantity of water, and fermented in the manner described in the chapter on fermentation. When the fermentation is completed, the whole is to be thrown into the still, and the spirit extracted by a strong fire.

The reason why we here direct a strong fire, is, because by that means a greater quantity of the essential oil will come over the helm with the spirit, which will render it much fitter for the distiller's purpose; for this spirit is generally used to mix with common malt goods: and it is surprising how far it will go in this respect, ten gallons of it being often sufficient to give a determining flavour, and agreeable vinosity to a whole piece of malt spirits.

It is therefore well worth the distiller's while to endeavour at improving the common method of extracting spirits from raisins; and perhaps the following hint may merit attention:

When

When the fermentation is complete, the still charged with fermented wine directed, let the whole be drawn over as brisk a fire as possible; but if in a cask or can, generally used by distillers for a receiver, let a large glass, by chemists, a separating-glass, be put into the nose of the worm, and a common glass applied to the spout of the separator; by this means the essential oil will rise to the top of the spirit, or rather lower than the separating-glass, and may be easily taken off at the end of the operation.

The use of this limpid essential oil is not well known to distillers; for in this resinous spirit there is no strong flavour, and consequently may be added to any spirit, giving it the greatest advantage in giving that delicate taste, and true vinosity, to the common spirits.

Aster the oil is separated from the liquor, the liquor may be rectified in *Baltimore*, and so refined into a pure and almost tasteless spirit, which is then well adapted to make the finest cordials, or to imitate, or mix with the best French brandies, arracs, &c.

In the same manner a spirit may be obtained from cyder. But as its particular flavour is not so desirable as that obtained from raisins, it should be distilled in a more gentle manner, and carefully rectified in the manner we shall shew in the chapter on rectification ; by which means a very pure, and almost insipid spirit will be obtained, which may be used to very great advantage in imitating the best brandies of *France*, or in making the finest compound waters or cordials.

C H A P. XXII.

Of Arracs.

WHAT is properly meant by the term arracs, are spirits extracted from the fermented juice of certain trees common in the *East Indies*, particularly those of the cocoa, palm-tree. The whole process of making arrac, is performed in the following manner :

In order to procure the vegetable juice for this operation, the person provides himself with a sufficient number of small earthen pots, with bellies and necks, resembling our common glass bottles; a number of these he fastens to his girdle, or to a belt across his shoulders, and climbs up the tall trunk of the cocoa-tree; having reached

reached the boughs of the tree, he cuts off with a knife certain small buds, or bunches, immediately to the wound one of which he fastens it with a string to the bough. After this he proceeds, till he has fixed a number of bottles, which serve as receivers for the juice distilling from the wounds. This operation is generally performed in the evening, because there is a greater quantity of juice flowing from the tree at night than in the day. The bottles are then closed, and the liquor left in them until the next morning, when they are taken off, and the liquor empended into another vessel, where it spontaneously ferments. As soon as the fermentation is completed, the liquor is drawn off, and thrown into the still, and distilled into common low wine; but so very poor and dilute is it, that we are obliged to rectify it in another still. Although it appears bubble-proof, it contains more than a sixth, and sometimes even an eighth of alcohol. All the rest is nothing more than an acidulated water, which is supplied from any common spring. It appears bubble-proof, when in reality, as at first sight it appears to be, because what we mean by proof, is not so much the strength of the liquor, as the property of the parts of the liquor, or the oil incorporated in it.

we shall abundantly shew in a subsequent chapter.

From this account of arrac, it should seem no very difficult matter to imitate it here. And, perhaps, the whole difficulty lies in procuring a pure and insipid spirit; for it is ridiculous to attempt it with our common malt spirit. With regard to the flavour of the arrac, it may be effectually imitated by some essential oils easily procurable.

Hence we see of what prodigious advantage a pure and insipid spirit would be of to distillers, and consequently the great encouragement there is to attempt the discovery. Perhaps a spirit of this kind may be extracted from sugar properly refined. The hint is worth prosecuting, and the writer of this essay, from repeated experiments, is abundantly convinced that the thing is practicable. Had he entirely succeeded, he would readily have communicated the whole for the benefit of his country; but is now obliged to defer, to some future opportunity, the result of his enquiries. In the mean time, he would recommend the prosecution of this hint to those distillers who endeavour to improve their art, and to advance it nearer to perfection.

Since arrac is a spirit extracted from the juice
of

of the cocoa-tree, it may perhaps quiring how nearly it may be uniting and distilling the juices of sycamore trees. We should by tain an *English arrac*; and, per eqial in flavour to that imported

When the cask, in which the arrac is keept, happens to be decayed, or the staves loose, and there are any nails, or other iron, it dissolves in the wine, and at the same time extracts the tannin of the oak, by which means the wine becomes dark, and the cask acquires an inky colour; but if the wine be left to stand, it will whiten and clarify arrac, which is then drawn off. To remove this colour, a large quantity of new milk must be put into the cask, and the two liquids well beat together, as vintners do to remove the colour from brown wines; by this means the colour will be absorbed by the milk, and the wine will be clear at the bottom, so that the greatest part of the arrac may be drawn off fine, and procured in the same condition, by being strained through a conical flannel.

CHAP. XXIII.

Of Rectification.

THERE are several methods of rectifying arrac; though some, and

in general practised by our distillers, hardly deserve the name; because, instead of rectifying, that is, freeing the spirit from its essential oil and phlegm, they alter the natural flavour of the spirit that comes over in the operation.

The principal business of rectification is to separate the spirit from the essential oil of the ingredient, which is very apt to adhere strongly to the spirit. And in order to this, care should be taken in the first distillation: that is, the spirit, especially that from malt, should be drawn by a gentle fire, by which means great part of the essential oil will be kept from mixing with the spirit; for experience has abundantly proved, that it is much easier to keep asunder, than to separate them when once mixed.

But as it is almost impossible to draw low wines without the spirit being in some measure impregnated with the essential oil, it is absolutely necessary to be acquainted with some methods of separating the spirit from the oil, and also of freeing it from its phlegm. The best methods of doing this to perfection, are re-distillation and percolation.

In order to rectify low wines, they should be
put

put into a tall body, or alembic, and distilled in *Balneum Mariæ*; by this proportion, both of the oil and spirit remain in the body. But if the spirit be found, after this operation, to contain the essential oil, it must be let down with water, and re-distilled in the same manner. And thus it may be brought to a due degree of purity; especially if in the second distillation the spirit be suffered to fall into a proper *Balneum Mariæ*. But it must be remembered, that it is much more difficult to clear oil from water than from proof-spirit, than low wines, because the oil is more intimately mixed with the water than with the latter. This oil may be separated from proof-spirit, &c. by the method already proposed, especially if it be first filtered through paper, thick flannel, or a stone, &c.

But this method, though it effectually answers the intention, is generally rejected by distillers, because of the slowness of the operation; and others substituted in its stead, instead of freeing the spirit from the water, only abolish the natural flavour of the spirit, and make a more intimate mixture between the particles of the spirit, and those of the water.

It is impossible to enumerate all the methods practised by distillers, as almost every one pretends to have a secret nostrum for this purpose. The principal methods in use for rectifying malt spirits, are, however, reducible to three, namely, by fixed alkaline salts, by acid spirits mixed with alkaline salts, and by saline bodies, and flavouring additions.

The method of rectifying by alkaline salts is thus performed : To every piece of proof-spirit, add fourteen pounds of dry salt of tartar, fixed nitre, or calcined tartar; lute on the head, and distil by a gentle heat, but be very careful to leave out the faints. By this method a large proportion of the foetid oil will be left in the still: and what comes over with the spirit will be greatly attenuated. But this operation is generally performed in a very different manner; for, instead of distilling the spirit in a gentle and equable manner, the still is worked in its full force; by which means the oil, which should have remained in the still, is driven over, and intimately mixed with the spirit; and consequently, the whole operation frustrated, and the spirit rendered much harder to cleanse than it was before.

But

But even when the operation is according to the rules of art, it is far from perfect; for it is well known, that the fixed salts become volatile in the heat of the still, and pass over the helm, and ultimately mix with the spirits, and consequently the essential oil still contained in the still, this means the oil becomes more united with the spirits, and consequently harder to be separated by repeated distillations.

Nor is this all, for the still being heated to full force, the bitter oil of the madder, a kind of liquid soap in the still, and the alkaline salt, is brought over the faints, and suffered to mix with the spirit, whereby it is rendered almost as ill-tasted as before the operation. If this operation were performed with the greatest perfection, it would never answer, because the alkaline salt destroys the volatile spirit, and consequently deprives the oil of its most valuable properties. Our author is well acquainted with this defect in the process, and endeavours to supply it by adding acids. This is what we call the separation of the oil from the spirit by alkalies and acids.

The operation of rectifying by fixed alkalies and acids, is the same as

described ; the spirit is drawn over from fixed alkalies as before ; but in order to mortify the alkali in the spirit, and restore its vinosity, a proper quantity of some acid spirit is added. Various kinds of acids are used on this occasion ; but principally those of the mineral kind, because of their cheapness ; as oil of vitriol, spirit of nitre, oil of sulphur, and the like. We would, however, caution a young distiller from being too busy with these corrosive acids ; the sulphureous spirit of vitriol, dulcified spirit of nitre, or Mr. Boyle's acid spirit of wine well rectified, will much better answer his purpose.

The third method of rectification is that by saline bodies, and flavouring ingredients. There is no difference in the operation between this and the two foregoing methods ; fixed alkaline salts, common salt decrepitated or dried, calcined vitriol, sandiver, alum, &c. is put into the still with the low wines, and the spirit drawn off as before. When the quantity is drawn off the flavouring ingredients are added to give the spirit the flavour intended. But as the spirit is not by this means rendered sufficiently pure, the disagreeable flavour of the spirit generally overpowers that of the ingredients, whereby the whole intention is either destroyed, or a com-

pound flavour produced, very different from that intended.

Some distillers, instead of alkalinizing their spirit with quick lime in rectifying their malted ingredient cleanses and dephlegmatises it considerably; but like that rectified spirit, it requires an alkaline salt, and also a nidorous flavour. Acid salts are as necessary to be mixed with spirit rectified with quick lime, as with that rectified with an alkaline salt. If chalk, or well purified animal bones, &c. were used instead of quick lime, the spirit would have much less alkaline or nidorous flavour; consequently, the flavouring ingredients might be added to it with more success than is to be expected from a spirit rectified with alkali.

But, perhaps, if neutral salts were used instead of the alkaline ones, the spirit would be rendered pure, without contracting any bad flavour; soluble tartar might be used for this purpose, though the spirit acquires a little saponaceous flavour. Dr. Cullen has mentioned another method for this purpose, which is to deprive the volatile salts of their power of acting by rendering them neutral with spirit of wine.

afterwards subliming them with salt of tartar ; the acid may be varied, if the spirit of salt should not be found so well adapted to the purpose as could be wished : but fine dry sugar seems the best adapted to the purpose of rectifying these spirits ; as it readily unites with the essential oil, detains and fixes it, without imparting any urinous, alkaline, or other nauseous flavour to the spirits rectified upon it.

Thus have I considered the principle methods used by our distillers, in rectifying their spirits ; and shall conclude this chapter with remarking, that there is no other way of rectifying to perfection, besides what we first laid down, namely, by gentle distillation. But then it must be remembered, that the whole process must be of a piece : we mean, that the first distillation from the wash must be performed in a gentle manner ; for otherwise the essential oil will be so intimately blended with the spirit, as not to be easily separated by re-distillation. Another good property attending this method is its universality ; all kinds of spirits, from whatever ingredients extracted, require rectification ; and this is adapted to all kinds.

C H A P. XXIV.

Of the Flavouring of Spirits.

We have observed in the preceeding chapter, that the common method of rectifying spirits from alkaline salts, destroys their vinosity, and in its stead introduces an urinous taste. But as it is absolutely necessary to store, or at least to substitute in its place, some degree of vinosity, several methods have been proposed, and a multitude of experiments performed, in order to discover this general *remedium gratum*: but none has succeeded except the spirit of nitre; and accordingly either strong or dulcified, has been used by most distillers, to give an agreeable flavour to their spirits.

Several difficulties, however, occur in the method of using it; the principle difficulty being, its being apt to quit the liquor in a short time, and consequently depriving the spirit of the vinosity it was intended to give. To remove this difficulty, and prevent the nitre from quitting the goods, the dulcified spirit of nitre, which is much better than the simple spirit, is used.

spirit, should be prepared by a previous digestion continued for some time with alcohol; the longer the digestion is continued the more intimately will they be blended, and the compound rendered the milder and softer.

After a proper digestion, the dulcified spirit should be mixed with the brandy, by which means the vinosity will be intimately blended with the goods, and disposed not to fly off for a very considerable time.

No general rule can be given for the quantity of this mineral acid requisite to be employed, because different proportions of it are necessary in different spirits. It should, however, be carefully adverted to, that though a small quantity of it will undoubtedly give an agreeable vinosity resembling that naturally found in the same subtle spirits drawn from wines, yet an over large dose of it will not only cause a disagreeable flavour; but also render the whole design abortive, by discovering the imposition. Those, therefore, who endeavour to cover a foul taste in goods by large doses of dulcified spirit of nitre, will find themselves deceived.

But the best, and indeed the only method of
imitating

imitating *French* brandies to perfect
essential oil of wine; this being the
that gives the *French* brandies their
must, however, be remembered, that
use even this ingredient to advantage
tasteless spirit must be first procured.
ridiculous to expect that this essence
be able to give the agreeable flavor
brandies, to our fulsome malt spirit
loaded with its own nauseous oil, or
pregnated with a lixivious taste from
salts used in reetification. How a
spirit may be obtained has been ad-
dressed in some of the preceding chapters;
therefore remains to shew the method
of extracting this essential oil of wine, which

Take some eakes of dry wine lees,
used by our hatters, dissolve them in
twice their weight of water, distil
with a slow fire, and separate the
parating glass: reserving for the
that only which comes over first, the
oil being coarser and more resinous.

Having procured this fine oil of
wine, it may be mixed into a quintessence with
water, by which means it may be preserved.

fully possessed of all its flavour and virtues; but without such management, it will soon grow resinous and rancid.

When a fine essential oil of wine is thus procured, and also a pure and insipid spirit, *French* brandies may be imitated to perfection with regard to the flavour. It must, however, be remembered, and carefully adverted to, that the essential oil be drawn from the same sort of lees, as the brandy to be imitated was procured from; we mean, in order to imitate *Coniac* brandy, it will be necessary to distil the essential oil from *Coniac* lees; and the same for any other kind of brandy. For as different brandies have different flavours; and as these flavours are owing entirely to the essential oil of the grape, it would be preposterous to endeavour to imitate the flavour of *Coniac* brandy, with an essential oil procured from the lees of *Bourdeaux* wine.

When the flavour of the brandy is well imitated by a proper dose of the essential oil, and the whole reduced into one simple and homogeneous fluid, other difficulties are still behind: the flavour, though the essential part, is not however the only one; the colour, the proof, and the softness must be also regarded, before a

spirit, that perfectly resembles brandy procured. With regard to the proportion, it is easily hit, by using a spirit rectified, which, after being intimately infused with the essential oil of wine, may be let down to the standard by fair water. And this may in a great measure be obtained by rectifying the spirit with a glass of water, what is wanting of this criterion being first made, will be supplied by the water. It must be remembered, that it is this property that gives this spirit its name, being at first like our spirits, acrid and fiery. But with regard to the colour, a particular method is necessary to insure its perfection: and how this may be done, will be considered in the next chapter.

C H A P. XXV.

Of the Methods of colouring

THE art of colouring spirits or liqueurs, depends on observations on foreign brandies. French brandy that has acquired a certain degree of softness and ripeness, is to have acquired a brown colour; and hence our distillers endeavoured to imitate this colour.

rits as are intended to pass for *French* brandy. And in order to this, a great variety of experiments has been made on various substances, in order to discover a direct and sure method of imitating this colour to perfection. But, in order to do this, it is necessary to know from whence the *French* brandies themselves acquire their colour; for till we have made this discovery, it will be in vain to attempt an imitation; because, if we should be able to imitate exactly the colour, which is indeed no difficult task, the spirit will not stand the test of different experiments, unless the colour in both be produced from the same ingredient.

This being undeniably the case, let us try if we cannot discover this mighty secret; the ingredient from whence the *French* brandy acquires its colour.

We have already observed, that this colour is only found in such brandies as have acquired a mellow ripeness by age; it is therefore not given it by the distiller, but has gained it by laying long in the cask. Consequently, the ingredient from whence this colour is extracted, is no other than the wood of the cask, and the brandy in reality is become a dilute tincture of oak.

The common experiment used to prove the
P. 5 genuine.

genuineness of *French* brandy pro-
opinion is well founded. The exper-
they pour into a glass of brandy a so-
solution of calcined vitriol of iron in
rit of sulphur, or any other mineral
whole turns of a blue colour; in the
as we make ink of a tincture of gal-

Since, therefore, the colour of *Fr.*
is acquired from the oak of the eas-
ficulty to imitate it to perfection. A
tity of the extract of oak, or the shav-
wood properly digested, will furni-
tincture capable of giving the spir-
of colour required. But it must be
that as the tincture is extracted fi-
by brandy, that is alcohol and wa-
sary to use both in extracting the
each of these menstruum dissolves
of the wood. Let, therefore, a suffi-
of oak shavings be digested in st-
wine; and also at the same time ot-
ings be digested in water; and whe-
have acquired a strong tincture fi-
let both be poured off from the sh-
different vessels, and both placed
fire till reduced to the consistenc-
In this condition, let the two ext-
mately mixed together; which ma-

fectually by adding a small quantity of loaf sugar, in fine powder, and well rubbing the whole together. By this means a liquid essential extract of oak will be procured, and always ready to be used as occasion shall require.

There are other methods in use for colouring brandies; but the best, besides the extract of oak above-mentioned, are common treacle and burnt sugar.

The treacle gives the spirits a fine colour; nearly resembling that of *French* brandy; but as its colour is but dilute, a large quantity must be used; this is not however attended with any bad consequences; for notwithstanding the spirit is really weakened by this addition, yet the bubble proof, the general criterion of spirits, is greatly mended by the tenacity imparted to the liquor by the treacle. The spirit also acquires from this mixture a sweetish or luscious taste, and a fulness in the mouth; both which properties render it very agreeable to the palate of the common people, who are, in fact, the principal consumers of these spirits.

A much smaller quantity of burnt sugar than of treacle will be sufficient for colouring the same quantity of spirits; the taste is also very different; for, instead of the sweetness imparted

ed by the treacle, the spirit acquireth sugar an agreeable bitterness; means recommends itself to nicer palates; those who are offended with a luscious spirit. •ugar is prepared by dissolving a quantity of sugar in a little water, and heating over the fire till it acquires a black

Either of the above ingredients, burnt sugar, will nearly imitate the colour of old French brandy; but they will succeed, when put to the vitriolic solution.

Thus have I traced the subject of brandy from its origin; shewn the methods made use of by distillers, and pointed out improvements that might be introduced into their art with great advantage; and shall now part with recommending the several methods to those distillers who are desirous of improving their art, and proceeding on a rational basis, it being from such only that improvements are to be expected; for where the experiments are constantly carried on in the same tract, it is in vain to expect improvement; less chance should be kind enough to lead them in their way, which a rational theorist easily led them to discover.

PART II.

CHAP. I.

Containing the Method of distilling Simple Waters.

THE instruments chiefly used in the distillation of simple waters are of two kinds, commonly called the hot still, or alembic, and the cold still; the former is represented in Fig. 5, and the latter in Fig. 10.

The waters drawn by the cold still from odiferous plants are much more fragrant, and more fully impregnated with their virtues than those drawn by the hot still, or alembic; but the operation is much more slow and tedious by the former than the latter, so that very few care to comply with it: and, therefore, a method has been invented, to avoid the tediousness of the one, and the inconveniences of the other. The method is this:

A pewter body is suspended in the body of the alembic, and the head of the still fitted to the
pewter

pewter body ; into this body the i
be distilled are put, the alembic fil
ter, the still head luted to the pewt
the nose luted to the worin of the
or worm.

The same intention will be answe
ting the ingredients into a glass a
placing it in a bath heat, or *Bain*
as we have before directed, Chap.

By either of these means, the
have greater heat given them than
still; and yet, by the interposition o
in which the vessel containing the
they are not so forcibly acted upon
as in the common way of the hot s
all those things which require a
between the other; that is, those si
are of a texture between very volati
fixed, are treated very properly by t
but neither the very odoriferous s
those whose parts are very heavy a
be treated this way but to disadvan

One of the greatest advantages o
trivance is, that waters so drawn
much cooler than from the hot sti

they have not so much of the fire in them, as the distillers term it; so that a hot spiey water, thus ordered, will taste as cool on the palate when just drawn, as it would, when drawn by the hot still, after it had acquired a considerable age.

C H A P. II.

Of Waters drawn by the Cold Still.

THE cold still is much the best adapted to draw off the virtues of simples, which are valued for their fine flavour when green, which is subject to be lost in drying. For when we want to extract from plants a spirit so light and volatile, as not to subsist in open air any longer than while the plant continues in its growth, it is certainly the best method to remove the plant from its native soil, into some proper instrument, where, as it dries, these volatile parts can be collected and preserved. And such an instrument is what we call the cold still, where the drying of the plant, or flower, is only forwarded by a moderate warmth, and all that rises is collected and preserved.

As the method of performing the operation by the cold still, is the very same, whatever plant or flower is used, the following instance of procuring

curing a water from rosemary, dantly sufficient to instruct the tiner in the manner of conducti in all cases whatever.

Take rosemary, fresh gathered, tion, with the morning dew upon lightly and unbruised upon the plate of the still. Cover the plate with a head; and apply a glass receiver to it.. Make a small fire of charcoal under the plate, continuing it as long as any water comes over into the receiver.. When no more comes over, take off the still head, and renew the plant, putting fresh in its stead as before ; continue to repeat the operation successively, till a sufficient quantity of water is procured. Let this distilled water be kept at rest in clean bottles, closed for some days in a cold place ; by this time it will become limpid, and powerfully impregnated with the taste and smell of the plant.

In this water are contained the liquid parts of the plant, consisting of its own proper parts, which may be easily without difficulty separated from the solid parts, and cleave to it even in the drying. These may be easily extracted by sticking to the outside, receiving

parts of the plant, which being elaborated the day before, and exhaled in the night, are hereby detained, so that they concrete together into one external liquid, which is often viscid, as appears in manna, honey, &c. This water also contains the fluid, which exhales from the vessels of the rosemary, and which principally consists of simple water, as appears upon long standing in an open vessel, when the taste and odour vanishing, leave an insipid water behind. Another part of this water is that subtile, volatile substance, which give the plant its peculiar taste and odour; for this the senses discover in it; but what remains after the process is finished, scarce afford any thing thereof. The same water seems also to contain seeds, or other little bodies; which, in a certain time, usually grow into a kind of thin, whitish weed, suspended in the middle of the water; and daily increasing or spreading itself, becomes a mucilage, which did not appear at first.

I have kept these waters undisturbed in separate well closed vessels, and observed that in a year's time, they began to appear thick, which thickness gradually increased every year, till at length the liquor grewropy and mucilaginous. Hence we see, that this water contains the ele-

mentary

mentary water, and presiding spirit a spirit small in bulk, but rich in exhibiting the specific smell and tangent. This water, therefore, in extracting a vehicle to that spirit, which contains a subtile, extremely volatile, and incomparable substance, the particular plant, leaving the remainder except respect: and hence proceeds the virtues of these waters, which principally depend upon their native spirit. For these plants, having a brisk mobility, affuse and raises the spirits in case of the

If the vessel be close stopped, in a cool place, the waters drawn by distillation will retain their virtues for a year, if carefully kept, or any crack should appear in the glass, their extremely volatile spirit immediately flies off, and leaves the water vapour.

Hence we learn what it is that causes the spirit to fly off when being dried in the summer time; for we have seen that the water and spirit we have been describing are the same. We also know the nature of that fluid which rises from plants in distillation, and that the spirit which is in plants, that is, their peculiar odour; that is, their pre-

Lastly, we hence learn, in some measure at least, what those *effluvia* are, which principally in the summer season, and in the open air, exhale from vegetables; for it is highly probable, that these constant exhalations of plants, especially in the day-time, have a near agreement in their peculiar nature, with the liquor extracted by the cold still, though differing in this, that the exhalation made from the parts is continually recruited by the root; whilst by our operation, those parts alone are collected, which are driven off from the plant, after being gathered, and no longer supplied with fresh nourishment.

C H A P. III.

Of the Distilling Simple Waters by the Alembic.

THE plants designed for this operation are to be gathered when their leaves are at full growth, and a little before the flowers appear, or, at least, before the seed comes on; because the virtue of the simple expected in these waters is often little, after the seed or fruit is formed, at which time plants begin to languish; the morning is best to gather them in, because the volatile parts are then condensed by the coldness of the night, and kept in by the tenacity of the dew, not yet exhaled by the sun.

This

This is to be understood, where the distilled water resides principally in the leaves of plants; as it does in mignonette, pennyroyal, rue, and many more. It differs when the aromatic virtue is in the flowers, as in roses, lilies &c. in which case we choose them whilst they smell the sweetest, and before they are quite opened, or the morning dew still hanging on them.

In other plants the seeds are the principal part, as in anise, caraway, cumin, &c. and the flower are indolent, and the virtue resides in the seed alone, where it is manifested by its remarkable fragrance, and taste. We find that seeds are more fully possessed of their virtue, when they arrive at perfection.

We must not omit that these properties are found only in the roots of some plants, as appears in avens, and in the roots of those whose roots smell like a rose. This kind should be gathered for the purpose, at that time when they are most full of these virtues: which is generally in the month of June, just before they begin to flower, when they are to be dug up in a

If the virtues here required be contained in the barks or woods of vegetables, then these parts must be chosen for the purpose.

The subject being chosen, let it be bruised, or cut, if there be occasion, and with it fill two thirds of a still, leaving a third part of it empty, without squeezing the matter close: then pour as much rain, or river water into the still as will fill it to the same height; that is; two thirds together with the plant: fit on the head, luting the juncture, so that no vapour may pass through: and also lute the nose of the still head to the worm: Apply a receiver to the bottom of the worm, that no vapour may fly off in the distillation; but that all the vapour being condensed in the worm, by cold water in the worm-tub, may be collected in the receiver.

Let the plant remain thus in the still to digest for twenty-four hours, with a small degree of heat. Afterwards raise the fire, so as to make the water in the still boil; which may be known by a certain hissing noise proceeding from the breaking bubbles of the boiling water: as also by the pipe of the still-head, or the upper end of the worm, becoming too hot to be handled; or the smoaking of the water in the worm-tub heated

heated by the top of the worm; the following of one drop into another, from the nose of the form an almost continual stream. By these signs we know that the requisite heat is given; if it be less than a gentle ebullition, the simple, here expected, will not be dissolved. On the contrary, when the fire is too strong, the water hastily rises into the still-head, both the worm and the distilled liquor being also raised, it blocks the neck of the still, for which reason it is no bad cause to have a piece of fine linen before the pipe leading to the still-head, that, in case of this accident, may be kept from stopping up the neck. Notwithstanding this precaution, if the fire be too fierce, the plant will stop up the still-head, and consequently the water finding no passage will blow off, and throw the boiling liquor about, so as to do a great deal of mischievous damage; and the more oily, tenacious, gummy the subject is, the greater the danger of this accident; because the liquor is very frothy and explosive.

Let the due degree of fire therefore be observed.

fully observed, and equally kept up, as long as the water, distilling into the receiver is white, thick, odorous, sapid, frothy, and turbid; for this water must be carefully kept separate from that which follows it. The receiver, therefore, should be often changed, that the operator may be certain that nothing but this first water comes over; for there afterwards arises a water that is transparent, thin, and without the peculiar taste and flavour of the plant, but generally somewhat tartarish and limpid, though somewhat obscured and fouled by white dreggy matter; and if the head of the still be of copper, and not tinned, the acidity of this last water corrodes the copper, so as to become green, nauseous, emetic, and poisonous to those who use it, especially to children, and persons of weak constitutions.

The first water above described, principally contains the oil and presiding spirit of the plant; for the fire, by boiling the subject, dissolves its oil, and reduces it into small particles, which are carried upwards by the assistance of the water, along with those parts of the plant that become volatile with their motion. And, if the vessels are exactly close, all these being united together, will be discharged without loss, and without much alteration, into the receiver: and consequently

quently, furnish us with a water nated with the smell, taste, and pa of the volatile parts of the plants ed from.

The water of the second runn volatile part above described, a any other virtue than that of co

And this is the best method of ple waters, provided the two sort together, for both of them would such a mixture.

Hence it plainly appears at w the same degree of fire, quite c may arise from a plant ; for so l water continues to come over fr as are aromatic, so long the warming and attenuating ; but to be thin and pelucid, it is acid

Hence we may also learn the t for conducting of distillation : se tion be stopped as soon as ever t ceases to come over, the prepara luable and perfect ; but if, throu increasing that quantity, more be

the latter acid part suffered to mix with the first running, the whole will be spoiled, or at least, rendered greatly inferior to what it would otherwise have been.

Such is the general method of procuring simple waters, that shall contain the volatile virtues of the plants distilled; some rules are, however, necessary to render it applicable to all sorts of plants; these rules are the following:

1. Let the aromatic, balsamic, oily, and strong-smelling plants, which long retain their natural fragrance, such as balm, hyssop, juniper, marjoram, mint, origanum, pennyroyal, rosemary, lavender, sage, &c. be gently dried a little in the shade; then digest them, in the same manner as already mentioned, for twenty-four hours, in a close vessel, with a small degree of heat, and afterwards distill in the manner above delivered, and thus they will afford excellent waters.

2. When waters are to be drawn from barks, seeds, or woods that are very dense, ponderous, tough, and resinous, let them be digested for three, four, or more weeks, with a greater degree of heat in a close vessel, with a proper quantity of salt added, to open and prepare them the

better for distillation. The quantity is here added, partly to open the plant more, but chiefly to prevent putrefaction, which otherwise would certainly happen in time, and with such a heat as is generated in this case, and so destroy the smell and virtues expected from the process.

3. Those plants which diffuse their virtue some distance from them, and therefore should immediately be distilled after being gathered in a proper season, without heat or digestion : thus borage, bugloss, jessamine, lilies, lilies of the valley, roses, &c. These may be distilled without heat, digestion, or lying in the air.

CHAP. IV.

Of increasing the Virtues of Simple Medicines by means of Cohobation

BY cohobation is meant the infusion of distilled water procured in the manner described in the preceding chapter, upon a fresh plant. The operation is performed in the following manner:

Take the plant and liquor required,

still after the operation described in the foregoing chapter is performed, and press them strongly in a bag for that purpose, that all the decoction may be obtained ; and with this mix all the water before drawn over. Return this mixture into the still, and a fresh quantity of the same plant, and, if necessary, as much water as will make the former proportion to the plant. Close all the junctures exactly, and digest the whole in a gentle degree of heat for three days and threennights, that the herb, being so long steeped in its own liquor may be opened, loosened, and disposed the easier to part with its virtues. This digestion is of great service; but if protracted too long, induces a change tending to putrefaction. Let the water now be distilled off, in the same manner as before; only proceeding more cautiously, and somewhat more slowly at first; because the liquor in the still being now thicker, more impregnated with the plant, and therefore more apt to swell upon feeling the fire, it easily boils over; but after about half of the expected water is come off, the fire may be gradually raised.

By this method, and carefully observing to change the receiver as soon as the first water is all come over, a noble liquor, highly impregnated with the virtues of the plant, will be ob-

tained. And as this operation may be repeated as often as desired, the virtues of the plant are thus exalted to any degree the art of distillation will admit; which shews the extraordinary power of distillation. This method I very particularly recommend for making the essences of balm, elder flowers, roses, and violets, but sparingly furnished with oil.

CHAP. V.

Of the Method of procuring a strong Spirit from Vegetables, by previously preparing the Vegetables before Distillation.

BY this elegant method we can procure the virtues of plants very little altered from what they naturally are, though rendered more penetrating and volatile. The operation is to be performed in the following manner.

Take a sufficient quantity of any plant, cut it, and bruise it if necessary; put it into a cask, leaving a space empty at top, about two inches deep; then take as much white wine as will, when added, fill the cask to the top; including the plant, and mix them together; add one eighth part of honey, if it be cold.

ther; or a twelfth part, if it be warm: in the summer the like quantity of coarse unrefined sugar might be added instead of honey, or half an ounce of yeast to each pint of water will have the same effect, though most prefer honey for this purpose. When the proper quantity of honey is added to the water, let it be warmed and poured into the cask, and set it in a warm place to ferment for two or three days; but the herbs must not be suffered to fall to the bottom, nor the fermentation above half finished. The whole must then be immediately committed to the still, and the fire raised by degrees; for the liquor containing much fermenting spirit, easily rarefies with the fire, froths, swells, and therefore becomes very subject to boil over; we ought therefore to work slower, especially at first.

By this method there will come over, at first, a limpid, unctuous, penetrating, odorous, sapid, liquor, which is to be kept separate; after this, there follows a milky, opaque, turbid liquor, still containing something of the same taste and odour; and at length comes one that is thin, acid, without either smell, or scarce any property of the plant..

The first water, or rather spirit, may be kept

several years, in a close vessel, will grow ropy. It also excelle taste and odour of the plant, altered: but if less honey were employed, or the fermentation smaller time, the distilled liquor ning would be white, thick, opaque, frothy, and perfectly retain the of the plant, or much less altered in this case; though the water will and penetrating. After this is distilled, limpid, inodorous liquor wi

And thus may simple waters long keeping without spoiling, tions of inflammable spirit generation, serving excellently to

C H A P. VI.

Of the Simple Waters comm

SIMPLE waters are not so present as they were formerly; a reason for their being neglected, methods used in distilling them; carried on in the same manner w though some should be gently di

distilled green; some should be drawn with the cold, and others with the hot still.

The general rule that should be observed with regard to the hot still is, that all herbs should have twice their weight of water added to them in the still; and not above a fourth or a sixth part of it drawn off again; for simple waters have their faints, if drawn too low, as well as those that are spirituous.

Some plants, particularly balm, require to have the water drawn from them cohobated, or poured several times on a fresh parcel of the herb, in order to give it a proper degree of strength or richness. Others, on the contrary, abound too much with an essential oil that floats on the distilled water; in this case all the oil should be carefully taken off. Lastly, those that contain a more fixed oil, should be imperfectly fermented in the manner laid down in the preceding chapter, before they are distilled; of this kind are carduu3, camomile, &c..

'The simple waters now commonly made, are orange-flower-water, rose-water, cinnamon-water, fennel-water, peppermint-water, spearmint-water, balm-water, pennyroyal-water, Jamaica

pepper-water, castor-water, simple
orange-peel, and of dill-seed.

C H A P. VII.

Of Orange-flower Water

THE orange-tree grows plentifully in *Spain*, and *Portugal*, and bears fruit all the year; but the fruit chiefly in October and November.

The flowers grow on the young twigs among the leaves; they are white, composed of a single cup-fashioned leaf, divided into several parts, with several yellow stamens in the middle, and of a fragrant odouriferous

Some degree of attention is required to make a simple and odouriferous water from the flowers; the fire must be carefully managed, for too small a degree will not bring out the essential oil of the flowers, in which the odouriferous flavour consists: and, on the other hand, too strong a fire destroys the fragrance of the water, and is very apt to scorch the flowers, so as to give the water an empyreumatic taste. A poultice should also be taken to fasten the bowels.

the end of the worm with a bladder, to prevent the volatile parts from evaporating:

The quantity of water, also, should be carefully attended to, if you hope to succeed in the operation. The following receipts will answer the intention.

Receipts for Orange-flower-water.

Take twelve pounds of orange-flowers, and twenty-four quarts of water, and draw over three pints. Or,

Take twelve pounds of orange-flowers, and sixteen quarts of water: draw over fifteen quarts, carefully observing what has been observed at the beginning of the chapter with regard to the regulation of the fire.

The manner of making Double Orange-flower-water, and the Essential Oil, or Quintessence of Orange-flowers.

Having shown how to make simple orange-flower-water, we shall now shew how to make double orange-flower-water, and the essential oil, or quintessence of orange-flowers.

Double orange-flower-water is made, by distilling the orange-flowers in a cold still; in the

manner laid down in the first chapter. The water extracted in this manner will be odorous and grateful, being without any double orange-flower-water. The odorous water will be obtained by putting the flowers in *Balneum Mariæ* without water in the still. If the cold still be used, put in it as many flowers as the head will hold, and then make a gentle fire under it, and as soon as you perceive the still to begin to work, fasten the receiver to the neck of the still with a bladder. The same caution is to be observed if the flowers are distilled in *Balneum Mariæ*.

To make this water to perfection, the flowers should be fresh gathered in the morning, with the dew upon them, if possible; or else picked from the leaves. You should make choice of the largest flowers, because these yield most in distillation. Be brisk when the flowers are distilled in *Balneum Mariæ*; because the operation is more difficult in performing than by the common still, and the flowers are not here in danger of being burnt at the bottom of the cucurbit; so that you would have your water of a fine smell, if you had collobated on fresh flowers.

With this double water, the essential oil or quintessence will come over, and float on the surface of the water. But a much larger quantity of it will be obtained, by cokobating the water on fresh flowers in *Balneum Mariæ*. The essential oil is at first of a green colour, but after some days it will turn reddish. The essential oil is easily separated from the water, by the separating-glass, in the following manner: stop the spout of the separating-glass with a cork, and then fill it with the orange-flower water; when it has stood a small time the oil will float on the surface. Then pull out the cork and let the water run out at the spout into another receiver placed for that purpose. As the water runs out at the spout of the separating-glass, let it be supplied at the mouth, that the separating glass may be always full of water, till the whole is in this manner poured into it. Then, by gently inclining the glass, pour out all the water in it through the spout, and the oil will remain in the separating-glass, and may be poured into another bottle, and kept separate from the water. The double orange-flower water is odoriferous; but the essential oil much more so.

Orange-flower water is not at present so much used as formerly; but as it is a very odoriferous

water, I thought the method of making it
not be unacceptable to the young

The essential oil, or quintessence of flowers, will make a very grateful perfume, mixing it with a clean proof spirit. The method of mixing it is this :

Take some fine loaf-sugar, and a small quantity of oil you intend to dilute with spirit, and rub them well together in a mortar, which is what the chemists call an oleosaccharum. Put this oleosaccharum into a glass vessel containing the spirit ; mix them well together, and then add sugar to your taste. If the perfume is too strong, it may be lowered with water, but you must observe that if you add water to spirit, it will bring the spirit considerably below its original strength. You must filtrate it through thick flannel, or a piece of white paper. Twenty drops of the essence will be sufficient for a pint of spirit, according to the proportion to a larger quantity.

C H A P. VIII.

Of Rose-water.

THE damask rose is the species which should be used in this operation ; it is of

smell, and flowers in June and July. The water may be made either by the hot still, the cold still, or the *Balneum Mariae*. If the hot still be used, the leaves picked from the stalks must be put into the still with a sufficient quantity of water to prevent an empyreuma, and the water drawn off by a gentle fire. The receiver must be luted with a bladder to the nose of the worm, to prevent the finest and most volatile parts from evaporating, which they would otherwise do, to the great prejudice of the water.

If the cold still be used, the rose leaves either with the dew on them, or sprinkled with water, must be laid on the iron plate, and covered with the conical head. A gentle fire must then be made under the plate, and a receiver luted with a bladder to the nose of the still. The water will gradually distil into the receiver, and be strongly impregnated with the odoriferous parts of the roses.

The same method with regard to the *Balneum Mariae* must be used in the distillation of roses as in that of orange-flowers, and therefore need not be repeated here. We shall therefore only observe, that rose-water, drawn either by the cold still, or the *Balneum Mariae*, is much preferable to that drawn by the hot still,

The

The essence, or essential oil of roses, is esteemed upon as one of the most valuable perfumes in the world; but at the same time the means of procuring it are few, and it cannot be procured in any quantity. A small quantity of it is made in *Italy*, but it has always been impossible to procure it here; and the method of acquiring this valuable essence, I suppose, will not, I presume, be disagreeable to the reader.

Take a quantity of damask roses, and lay them into a proper vessel, with a sufficient quantity of water, adding some mineral water, and a quantity of salt, vitriol, &c. In this mensuration let the roses be digested for fifteen days; then put the whole into an alembic, and distill the water with a pretty brisk fire. But before you draw off the common receiver, a separatrix must be placed under the nose of the alembic, so that the receiver added to the tube of the alembic may be placed over the separatrix, and the glass. By this means all the oil of roses will float on the surface of the water in the separating-glass, and may easily be separated from the water when the operation is finished.

C H A P. IX.

Of Cinnamon-water.

CINNAMON is a thin fine bark, which is cut in a sort of little pipes, from the tree.

goose-quill, to that of a man's thumb, and sometimes more, and about two or three feet long. Its colour brownish, with a mixture of red. It is of an extremely aromatic smell, and of an acrid and pungent, but very agreeable taste. It is the interior or second bark of a tree that grows plentifully in *Ceylon*. The people who gather it take off the two barks together, and immediately separating the outer one, which is rough, and has very little fragrancy, they lay the other to dry in the shade in an airy place, where it rolls itself up into the form wherein we see it.

The greatest cheats in the sale of cinnamon; are the selling such as has already had its essential oil distilled from it, and dried again, and the imposing cassia lignea in its place. The first of these is discovered by the want of pungency in the cinnamon; the second by this, that the cassia, when held a little time in the mouth, becomes mucilaginous, which the true cinnamon never does. Cinnamon is a noble drug, endued with many capital virtues; it strengthens the viscera, assists concoction, dispels flatulencies, and is a pleasant cardiac.

Recipe

Recipe for one Gallon of simple Cinnamon Water.

Take a pound of the best cinnamon, powdered, digest for twenty-four hours in two gallons of water; put the whole into a strong vessel, and draw over one gallon with a

The oil of cinnamon, in which the virtue of the drug consists, is very volatile, and therefore will not come over, unless the fire be pretty brisk, especially in simple water. It will therefore be best to attempt distilling simple cinnamon water in the *Balneum Mariæ*.

CHAP. X.

Of Fennel-Water.

FENNEL-WATER is extracted from the seeds of a plant larger and more beautiful than our common fennel; it is called *fennelseed*, being of a fragrant smell, and having a sweet taste, and is cultivated in *Italy*. It is to be chosen, new, large, and round, but when damp or dusty, to be rejected.

Recipe for one Gallon of Fennel-Water.

Take one pound of sweet fennel-seeds, and two gallons of water; put them into an alembic, and draw off one gallon with a gentle fire.

C H A P. XI.

Of Peppermint-Water.

PEPPERMINT is a very celebrated stomachic, and on that account greatly used at present, and its simple water often called for.

Recipe for a Gallon of Peppermint-Water.

Take of the leaves of dried peppermint, one pound and a half; water, two gallons and a half; put all into an alembic, and draw off one gallon with a gentle fire.

The water obtained from peppermint by distillation in *Balneum Mariae*, is more fragrant and more fully impregnated with the virtues of the plant than that drawn by the alembic. The same may be said with regard to that extracted by the cold still; when the cold still is used the plant

plant must be green, and if possible to the still with the morning dew.

CHAP. XII.

Of Spearmint-Water.

SPEARMINT is also, like mint, a great stomachic, and therefore of service in the same diseases.

Recipe for one Gallon of Spearmint-Water.

Take of the leaves of dried spearmint a pound and a half; water two pints; draw off by a gentle fire.

This water, like that drawn from mint, will be more fragrant if distilled in a still of *Mariae*, or the cold still; but if it is to be used, the same caution must be observed as in distilling the plant green.

CHAP. XIII.

Of Balm-Water.

BALM is a plant well known in the British Islands. It flowers in July, and is of a

vour; but so weak, that it is soon dissipated and lost; nor is it easy to dry it so as to preserve its natural scent.

Balm-water, therefore, should be drawn when the plant is green; and in order to procure the water in full perfection, it should be cohabitated, or returned several times upon fresh parcels of the plant; by this means a water may be procured from balm extremely rich, and of considerable use as a cordial.

If the *Balneum Mariae* be used, the water is much better than that drawn by an alembic. The water drawn from this plant by the cold still will also be very fragrant, and highly impregnated with the virtues of the plant.

CHAP. XIV.

Of Pennyroyal-water.

PENNYROYAL, a plant very common in England, is very warm, and its parts very subtle and penetrating: it is one of the first plants in esteem in the present practice, as well as in former ages, as an attenuant and uteride. It is good in flatulencies and suppressions of urine, and

and by many is greatly recommended; jaundice, and other chronic diseases, communicates its virtues to water; and its simple water has, perhaps, more virtue than any other kept in the shop. It is a requisite in order to obtain a good water, to let it stand, and be pregnated with the virtues of the plant; then strain it, and imbibe it on fresh parcels of the plant; draw off one gallon of water drawn from green pennyroyal, which generally contains so large a portion of the essential oil, that it is necessary to strain it; it floats on the surface of the water, and may be seen in a rating-glass.

Recipe for one Gallon of Pennyroyal Water.

Take of, the dried leaves of pennyroyal, a pound and a half, of water three quarts, and boil them; strain off one gallon with a gentle fire.

The water drawn from green pennyroyal, in the cold still, is very fragrant, and pregnant with the virtues of the plant.

C H A P. XV.

Of Jamaica Pepper-water.

JAMAICA pepper, or pimento, is a fruit of a tall tree growing in the mountains of the West Indies.

of *Jamaica*, where it is much cultivated, because of the great profit arising from the cured fruit, sent in large quantities annually into *Europe*.

It is gathered, when green, and exposed to the sun for many days on cloths, and frequently shook and turned, till thoroughly dry; great care is taken during the time of drying to defend the fruit from the morning and evening dews; when thoroughly dried it is sent over to us.

It is a very noble aromatic, and deserves to be used more frequently than it is at present. The simple water drawn from it is a better carminative than any other simple water at present in use.

Recipe for a Gallon of Jamaica Pepper-water.

Take of *Jamaica* pepper half a pound, water two gallons and a half; draw off one gallon with a pretty brisk fire. The oil of this fruit is very ponderous, and therefore this water is best made in an alembic.

C H A P. XV

Of Castor-water

THIS drug is brought to us in bags that naturally contained much resemble the testicles of some creatures, that it is no wonder we did not examine their situation on taking them for such; it is, however, the secreted matter, contained in these bags, that receive it.

Castor is an indurated substance, or matter once fluid; the thinness of which has been evaporated by drying, leaving a friable matter, of a moderate consistence, and of a deep dusky brown colour; it has a somewhat acrid and bitterish taste, and a strong foetid smell, which, to some persons, is very disagreeable.

The animal that produces this drug, was formerly by some authors called castor and fiber, and by others, gar, the beaver.

The castor of several parts of the world differ in goodness, and in regard to the care taken in the drying. The *Russian* castor has long been the most esteemed, and the *New England* kind the least.

Castor water is of great use in hysterical cases, and all diseases of the nerves; in epilepsies, palsies, and all complaints of that kind.

Recipe for making one Gallon of Castor-water.

Take of *Russia* castor an ounce, of water three gallons; draw off one gallon with a pretty brisk fire.

C H A P. XVII.

Of Orange-peel-water.

THE orange is a fruit too well known to need a description here. The water is very grateful to the taste, and often used in fevers, &c.

Recipe for one Gallon of Orange-peel-water.

Take of the outward yellow rind of *Seville* oranges, four ounces; water, three gallons and a half;

half; draw off one gallon by the
a pretty brisk fire.

C H A P. XVI

Of the Water of Dill.

DILL greatly resembles fennel in stalk, and leaf, but rarely grows much branched; it bears the same low umbels of flowers, after which they are rounder, broader, and flatter than fennel. The whole plant is of a sweet and pleasant than fennel. It grows flowers and seeds in July and August. The water drawn from the seeds is diaphoretic, emollient, and antispasmodic, good in choleric, and pleuritic disorders, and in those arising from wind.

*Recipe for making a Gallon of
Dill-seed.*

Take of dill-seed one pound, and boil them; distill off by the alembic over a pretty brisk fire.

The waters we have enumerated are those now commonly in use.

are many other herbs, from whence waters of great use may be drawn ; but as the method of distillation is the same in all, it would be of no use to extend these instructions to a greater length ; we shall therefore only observe, that when unfavourable seasons have prevented the herbs from attaining a proper degree of perfection, it will be necessary to increase their proportion in extracting the several waters ordered to be drawn by the alembic.

PART III

Of making Compound Waters &c.

THE perfection of this grand art of Alchymy and Artillery depends upon the observance of the following general rules, easy to be understood and practised.

1. The artist must always be careful to use a well cleansed spirit, or one freed from all impurities, as were before observed in Chap. xxiii. For as a compound water consists of nothing more than a spirit impregnated with the essential oil of the ingredients, it is evident that the spirit should have deposited nothing but the oil.

2. Let the time of previous digestion be proportioned to the tenacity of the ingredients, according to the ponderosity of their oil. Thus, for example, cinnamon require a longer digest than calamus aromaticus, and the oil of the cinnamon peel. Sometimes cohabitation (see Part II. Chap. iii.) is necessary; as in the case of making the strong cinnamon-water.

the essential oil of cinnamon is so extremely ponderous, that it is difficult to bring it over the helm with the spirit without cohabitation.

3. Let the strength of the fire be proportioned to the ponderosity of the oil intended to be raised with the spirit. Thus, for instance, the strong cinnamon-water requires a much greater degree of fire than that from lax vegetables, as mint, balm, &c.

- 4. Let only a due proportion of the finest parts of the essential oil be united with the spirit; the grosser and less fragrant parts of the oil not giving the spirit so agreeable a flavour, and at the same time renders it thick and unsightly. This may in a great measure be effected by leaving out the faints, and making up to proof with fine soft water in their stead.

These four rules carefully observed will render this extensive part of distillation far more perfect than it is at present. Nor will there be any occasion for the use of burnt alum, white of eggs, isinglass, &c. to fine down cordial waters: for they will presently be fine, sweet and pleasant tasted, without any farther trouble.

CHAP. I.

Of strong Cinnamon-Water.

WE have already (Chap. viii.) described this drug, and given some chusing the best sort, to which thferred.

Recipe for Sixteen Gallons of strong Water.

Take eight pounds of fine cinnamon, seventeen gallons of clean rectified spirit, and two gallons of water. Put them into a vessel, and digest them twenty-four hours over a slow heat; after which draw off sixteen gallons, and boil them over a pretty strong heat.

I have ordered a much larger quantity of this strong water than is common among apothecaries; when made in the manner above directed, it is justly looked upon as one of the best medicinal waters of the shops; but when made in the common way of two pounds to a gallon of spirit, as some have ordered, it will depend entirely on the buyer. Some also

goods cheaper, use equal quantities of cinnamon and cassia lignea; but by this means the cordial is rendered much worse; and, therefore, if you desire a fine cinnamon-water, the above recipe will answer your intention; but if a cheaper sort be desired, you may lessen the quantity of cinnamon, and add cassia lignea in its stead. If you would dulcify your cinnamon-water, take double-refined sugar, what quantity you please; the general proportion is about two pounds to a gallon, and dissolve it in the spirit after you have made it up proof with clean water. One general caution is here necessary to be added, namely, that near the end of the operation you carefully watch the spirit as it runs into the receiver, in order to prevent the faints mixing with the goods. This you may discover by often catching some of it, as it runs from the worm, in a glass, and observing whether it is fine and transparent; for as soon as ever the faints begin to rise, the spirit will have an azure, or bluish cast. As soon, therefore, as you perceive this alteration, change the receiver immediately; for if you suffer the faints to mix with your other goods, the value of the whole will be greatly lessened. With regard to the faints, they are to be kept by themselves, and poured into the still when fresh parcel of the same goods is to be made.

It is also necessary to observe all, that the distillers call all proof, *double goods*; and those proof, *single*. This observation sufficient to instruct the young may at any time turn his proof into single.

C H A P. II.

Of Clove Water

CLOVES, from whence this name, are the fruit of a tree growing in the *lucca* islands. The figure of them is long and not very thick, resembling a nail. The surface of it is of a dusky brown, with a reddish. The whole fruit is of a fragrant smell, and of an acid very aromatic taste. Cloves are the largest, fairest, darkest colour, and most unctuous on the surface, between the fingers. Cloves are good against all distempers arising from cold causes. They clear the sight, and are good against faintings of the heart, and credulities.

Recipe for Fifteen Gallons of Clove Water.

Take of cloves bruised four pounds, pimento, or all-spice, half a pound, clean proof of spirit sixteen gallons; let it digest twelve hours in a gentle heat, and then draw off fifteen gallons with a pretty brisk fire. Or,

Take *Winter's* bark four pounds, pimento six ounces, cloves one pound and a quarter, clean proof spirits sixteen gallons: digest, and draw off as before.

The *Winter's* bark, added in the second recipe, is the bark of a large tree, growing in several parts of *America*, and has its name from its discoverer, Captain *Winter*.

The outer rind of it is of an uneven surface, and of a loose texture, very brittle, and easily powdered. The inner part, in which the principal virtue resides, is hard, and of a dusky reddish brown colour. It is of an extremely fragrant and aromatic smell, and of a sharp, pungent, spicy taste, much hotter than cinnamon in the mouth, and leaving in it a more lasting flavour. It is to be chosen in pieces not too large, hav-

ing the inner or brown part firm of a very pungent taste. It is eaten; but in that case it should be rejected, as having lost the most of its virtue.

If you desire to have your clove-water may be coloured either by a strong extract of cochineal, alkanet-root, or corn-flower. The first gives the most elegant colour, but is not often used on account of its cost.

You may dulcify it to your palate by adding in it double-refin'd sugar. Since the French use a coarser kind of sugar, it renders the goods foul and unsightly. To save expences, make what is called Lemon water, with cloves and caraway-seeds. The proportion they generally use is half a drachm of cloves and two drachms of caraway-seeds to a gallon of spirit.

CHAP. III.

Of Lemon Water.

THE peel of the lemon, the principal ingredient in making this water, is a very grateful medicine, and on that account very useful in repairing and strengthening the body.

Recipe for Ten Gallons of Lemon-Water.

Take of dried lemon-peel four pounds, clean proof spirit ten gallons and a half, and one gallon of water. Draw off ten gallons by a gentle fire. Some dulcify lemon water, but by that means its virtues, as a stomachic, are greatly impaired

C H A P. IV.

Of Hungary Water.

ROSEMARY, the principal ingredient in Hungary water, has always been a favourite shrub in medicine; it is full of volatile parts, as appears by its taste and smell. It is a very valuable cephalic, and is good in all disorders of the nerves; in hysterick and hypochondriac cases, in palsies, apoplexes, and vertigoes. Some suppose that the flowers possess the virtues of the whole plant in a more exalted degree than any other part; but the flowery tops, leaves, and husks, together with the flowers themselves, are much fitter for all purposes, than the flowers alone.

Recipe for Ten Gallons of Hung

Take of the flowery tops, with the flowers of rosemary fourteen pounds; spirit eleven gallons and a half, when, distill of ten gallons with a receiver, If you perform this operation in a receiver, your Hungary water will be more fragrant if drawn by the common alembic.

This is called Hungary water, first made for a princess of that kingdom; add lavender flowers, and other roots of orice-root; but what is most esteemed is Hungary water made with rosemary only.

C H A P. V.

Of Lavender Water.

THERE are two sorts of lavender water, simple and compound; the first is applied externally on account of its fragrant and aromatic properties; the latter internal, for the cure of a great number of disorders.

Recipe for Ten Gallons of Simple Lavender Water.

Take fourteen pounds of lavender flowers, ten gallons and a half of rectified spirit of wine, and, one gallon of water; draw off ten gallons with a gentle fire; or, which is much better, in *Balneum Mariae*.

Both the Hungary and lavender water, may be made at any time of the year without distillation, by mixing the oil of the plant, with highly rectified spirit of wine. In order to this, when the plant is in perfection you should distill a large quantity of it in water, with a very brisk fire; placing under the nose of the worm the separating-glass (described page 31. Part I. of this Treatise,) by which means you will obtain the essential oil of the plant, in which both its fragrance and virtue reside. Having procured the essential oil of the plant, the water may readily be made in the following manner: Put the rectified spirit into the receiver (described page 32. fig. xii.) and let an assistant shake it with a quick motion: whilst the spirit is thus agitated, drop in leisurely the essential oil, and it will mix without any foulness or milkiness.

The oils of lavender and rosemary are cheaper from abroad, than they are here ; but these oils will not mix well without rendering it foul and milky. Therefore, if you propose making Hungary water in this manner, it will be better to extract the oil yourself.

*Recipe for making Three Gallons
Lavender Water.*

Take of lavender water above one gallon, of Hungary water one gallon, and nutmegs of each three ounces, saunders one ounce ; digest the whole in a gentle heat, and then filter it, add saffron, musk, and ambergris, a scruple ; but these are now generally omitted.

This compound lavender water is celebrated in all nervous cases, palsies, and loss of memory, it is of great service ; and has been so much recommended for its efficacy in these complaints, as a remedy for palsies, that it has got the name of Palsey water.

CHAP. VI.

Of Citron Water.

THE citron is an agreeable fruit resembling a lemon in colour, sinell, and taste. The inside is white, fleshy and thick, containing but a small quantity of pulp, in proportion to the bigness of the fruit.

Recipe for making Ten Gallons of Citron Water.

TAKE of dry yellow rinds of citron four pounds, clean proof spirit ten gallons and a half, water one gallon; digest the whole twenty-four hours with a gentle heat; draw off ten gallons with a gentle fire; or, which is much better, in *Balneum Mariæ*, and dulcify it with fine sugar to your palate. Or,

Take of dry yellow rinds of citrons three pounds, of orange peel two pounds, nutmegs bruised three quarters of a pound; digest, draw off, and dulcify as before.

This is one of the most pleasant cordials we have; and the addition of the nutmegs, in the second

second receipt, increases its virtue
and stomachie.

CHAP. VII.

Of Aniseed Water.

ANISEED is a small seed of a star shape, each way ending in an obtuse point; the surface is very deeply striated, and has a thin, brittle, and lax substance, very light and volatile. Its colour is a kind of pale olive-grey: it has a very strong and aromatic smell, and a sweetish but acid taste, but is not disagreeable. Aniseed should be large, fair, new, and clean, of a strong smell, and acrid taste. The plant that bears it is cultivated in many parts of France, and the finest seed comes from the island of Marseilles, where it is raised for sale, and whence it is sent to every part of Europe is supplied.

Recipe for Ten Gallons of Aniseed Water.

Take of aniseed bruised two pounds, and put them into a vessel containing spirit twelve gallons and a half, without stirring them; draw off ten gallons, with a narrow funnel; draw off the rest.

Or,

Take of the seeds of anise and angelica, each two pounds, proof spirit twelve gallons and a half; draw off as before.

Aniseed water should never be reduced below proof, because of the large quantity of oil with which the spirit is impregnated, and which will render the goods milky and foul, when brought down below proof; but if there be a necessity for doing this, the goods must be filtrated either through paper or the filtrating bag, which will restore their transparency.

Aniseed water is a good carminative, and therefore in great request among the common people against the cholic.

CHAP. VIII.

Of Caraway Water.

CARAWAY-SEED is of an oblong and slender figure, pointed at both ends, and thickest in the middle. It is straighted on the surface, considerably heavy, of a deep brown colour, and somewhat bright or glossy. It is of a very penetrating sinell, not disagreeable, and of a hot, acrid, and bitterish taste. Caraway-seed is

is to be chosen large, new, and of a white colour; not dusty, and of an agreeable smell; which produces the caraway-seed water in the meadows of France and in many other places; but is sown for the sake of the seeds in Germany and other parts of Europe.

*Recipe for making Ten Gallons
of Caraway-water.*

Take of caraway-seeds bruised, a pound; proof spirit twelve gallons, water to draw off ten gallons, or till the spirit rise; make the goods up with elder-flowers, and dulcify with common sugar to your taste.

Take of caraway-seed bruised, a pound and a half, orange or lemon-peel, a pound, proof spirit twelve gallons, water to draw off ten gallons; draw off, and dulcify as before.

Caraway-water, like that of the French, is a good carminative; but not so much pleasanter.

CHAP. IX.

Of Cardamom Seed Water.

THE seed from whence this water takes its name, is called by botanists *Cardamum Minus*, or the lesser cardamom: to distinguish it from the *Cardamomum Majus*, or grains of paradise.

The lesser cardamom is a small short fruit, or membranaceous capsule, of a trigona form, about a third of an inch long, and swelling out thick about the middle; beginning small and narrow from the stalk, and terminating in a small but obtuse point at the end. It is striated all over very deeply with longitudinal furrows, and consists of a thin but very tough membrane, of a fibrous texture, and pale brown colour, with a faint cast of red. When the fruit is thoroughly ripe, this membrane opens at the three edges all the way, and shews that is internally divided by three thin membranes, into three cells, in each of which is an arrangement of seeds, separately lodged in two series. The seeds are of an irregular angular figure, rough, and of a dusky brown colour on the surface, with a mixture of yellowish and reddish, and of white colour within.

They

They have not much smell, unless when they are much like camphor. They are of an acrid, aromatic hot taste. They should be chosen shut on all sides, and full of seed, smell, and of an acrid aromatic taste.

Recipe for Ten Gallons of Cardamom Water.

Take of the lesser cardamom two pounds and a half, of clean pellitory root one pound, of saffron a small bunch, of nutmegs three quarters of a pound, of cardamom water ten gallons and a half, and of water ten gallons. Draw off ten gallons by a gentle heat, either dulcify it or not with fine sugar, and strain it.

This water is carminative, assuaging, and good to strengthen the head.

C H A P. X.

Of Aquila Mirabilis; or, the Wonderfull Eagle.

MOST of the ingredients in this chapter have already been described, and the nutmegs will be given in Chapter X. The cubebbs and ginger remain to be described.

Cubebbs are small dried fruit resembling

per-corn, but often somewhat longer; of a dark brown colour, composed of a wrinkled external bark; of an aromatic, though not very strong smell, and of an acrid and pungent taste, though less so than pepper; but its acrimony continues long on the tongue, and draws forth a large quantity of saliva. We have two kinds of cubebbs, which differ only in their periods of gathering, both are produced from the same plant. The unripe cubebs are small, very wrinkled on the surface, and their nucleus, when broken, is flacid: but the ripe ones not so. Cubebs are brought from the Island of *Java*, where they grow in great abundance. They should be chosen large, fresh, and sound, and the heaviest possible. They are warm and carminative, and esteemed good in vertigoes, palsies, and disorders of the stomach.

Ginger is a root too well known to need a long desription; it is sufficient to observe, that it is of a pale yellowish colour when broken, of a fibrous structure, and easily beat into a sort of woolly or long thready matter. It is of a very hot, aerid, and very pungent taste; but aromatic withal, and of a very agreeable smell. We have it both from the *East* and *West Indies*; but the oriental is much superior to the occidental

dental in its flavour, of a firmer substance, does not beat out so much into the mouth; it is an excellent carminative and stomachic, assists digestion, dispels flatulencies, and relieves cholic pains almost instantaneously.

There are several receipts for celebrated cordials; but the following is esteemed to be the best.

Take of cinnamon one pound and a half, rind of lemon-peels ten ounces, nutmeg one ounce and a quarter, leaves of balm and mint a pint; bruise all these ingredients, and pour upon them eleven gallons of clean proof spirit; add a gallon of water; digest the whole two hours, and distill off ten gallons with a brisk fire; and dulcify it with fine sugar.

Take of the lesser cardamoms, cloves, galangal, mace, nutmeg, and ginger, one pound and three quarters, of which take a part of citron-peel and cinnamon one pound and a half, of the leaves of mint a pint; bruise these ingredients, pour upon them eleven gallons of spirit and water; digest, and draw off, &c. as before.

This cordial has been long cele-

noble stomachic, and therefore greatly called for.

Some, instead of all the ingredients enumerated in the above receipts, use only pimento; and this is the sort of aqua mirabilis which some sell so very cheap.

C H A P. XI.

Of Mint Water.

THE mint intended in this recipe is the common spearmint, an account of which has already been given, page 138.

Recipe for Ten Gallons of Mint Water.

Take of dry spearmint leaves fourteen pounds, proof-spirit ten gallons and a half, water two gallons; draw off ten gallons by a gentle heat. You may dulcify it with sugar, if required.

Mint water is greatly recommended by the learned *Borhaare* and *Hoffman*, against vomiting, nausea, and the cholick.

C H A P. XII.

Of Peppermint Water

THE peppermint has been already mentioned on page 137, to which the reader is referred.

Recipe for Ten Gallons of Peppermint Water

Take of dry peppermint leaves two pounds, proof spirit ten gallons and boil them together one gallon; draw off ten gallons before the fire. You may either dulcify or sweeten it.

Peppermint water is a noble specific against vomiting, nausea, choleric fits, griping pains in the bowels; in all these diseases it greatly exceeds the common water.

C H A P. XIII.

Of Angelica Water.

THERE are two sorts of angelica, the single and the compound. I shall give the best recipe for making both kinds; and with respect to the single sort, the nature of angelica, it is sufficient to say, that it is an excellent carminative.

Recipe for Ten Gallons of Single Angelica Water.

Take of the roots and seeds of angelica, cut and bruised, of each one pound and a half, proof spirit eleven gallons, water two gallons; draw off ten gallons, or till the faints begin to rise, with a gentle fire; and dulcify it, if required, with lump sugar.

This angelica water is a good carminative, and therefore good against all kinds of flatulent cholicks, and griping of the bowels.

Recipe for Ten Gallons of Compound Angelica Water.

Take of the roots and seeds of angelica, and of sweet fennel seeds of each one pound and a half; of the dried leaves of balm and sage of each one pound; slice the roots, and bruise the seeds and herbs, and add to them of cinnamon one ounce; of cloves, cubebes, galangals, and mace, of each three quarters of an ounce; of nutmegs, the lesser cardainom seed, pimento, and saffron, of each half an ounce: infuse all these in twelve gallons of clean proof spirit, and draw off ten gallons, with a pretty brisk fire. It may be dulcified or not at pleasure.

This

This is an excellent compositi-
erful carminative; and good in al-
lies, and other griping pains in the
is also good in nauseas, and other
the stomach.

It may not be amiss to observe,
distilling this and several other
abounding with oily seeds, the op-
be careful not to let the faints
other goods as they would by the
rendered nauseous and unsightly;
therefore be careful, towards the
the operation, to catch some of the
runs from the worm in a glass;
as ever he perceives it the least
move the receiver, and draw
themselves.

C H A P. XIV.

Of Orange Water.

THIS water is made in the same
from the peels of oranges, as citron
vi.) is from the peels of citrons.

Recipe for Ten Gallons of Orange-water.

Take of the yellow part of fresh orange-peels five pounds, clean proof spirit ten gallons and a half, water two gallons; draw off ten gallons with a gentle fire.

This is a good stomachic, and may also be used for making bitter tinctures, as that called *Stoughton's* drops.

C H A P. XV.

Of Plague Water.

THERE are several recipes for making plague water; but the following are much the best:

Recipe for Ten Gallons of Plague-water.

Take of the roots of masterwort and butter-burr, of each one pound and a quarter; of *Virginia* snake-root and zedoary, of each ten ounces; angelica-seeds and bay-seeds, of each fourteen ounces; and of the leaves of scordium, one pound and a half. Cut or bruise these ingredients, and put them into the still, with twelve gallons of

clean proof spirit, and two gallons digest the whole for twenty-four hours; draw off ten gallons. Or,

Take of the leaves of celandine, sage, Roman wormwood, drachms; balm, scordium, the lesser centaury, benedictus, betony, and mint, handfulls; of dried angelica-root, gentian, of each ten ounces, and snake-root five ounces; digest them all together for twelve hours, in twelve gallons of clean proof spirit; add two gallons of water; and draw off ten gallons as before. Or,

Take of rue, rosemary, balm, centaury, dictus, scordium, marigold-flower, goat's-rue, and mint, of each a drachm; roots of masterwort, angelica, lily-of-the-valley, piony, of each one pound and a half; roots of viper-grass, ten ounces; digest them in twelve gallons of spirit, &c. as before. Or,

Take of the roots of masterwort, centaury, snake-root, of each seven ounces; roots of violets bruised, eighty; venice-treacle, of each three ounces; roots of sassafras, drachms; of the roots of rue and

each three ounces; horehound six ounces; saffron six drachms; proof spirit twelve gallons; digest, &c. as before. Or,

Take dragons, rosemary, wormwood, sage, scordium, mugwort, scabious, balm, carduus, angelica, marigold-flowers, centaury, betony, pimpernel, celandine, rue, and agrimony, of each three pounds; of the roots of gentian, zedoary, liquorice, and elecampane, of each twelve ounces; twelve gallons of spirits; digest, &c. as before. Or,

Take of green walnuts, five pounds; of angelica-root, two pounds; of the leaves of angelica, ruc, sage, and scordium, of each ten handfuls; of nutmegs, long-pepper, ginger, cainphire, and gentian root, of each five ounces; of snake-root, contrayerva, elecampane, zedoary, and viper's flesh, of each thirteen ounces; venice treacle and mithridate, of each thirteen ounces; white-wine vinegar, seven pounds; proof spirit, twelve gallons; digest, &c. as before.

You may either dulcify your plague-water or not, as you see occasion.

All the above receipts for making plague-water

water are in use; but the first is elegant, containing nothing but water, the intention, and at the same time to give its virtues by distillation; which is said of any of the rest, several of them adding no virtue at all to the water. Kind are the celandine, carduus, tian, walnuts, &c.

Plague-water is a noble alexiphic, high carminative cordial in malignant fevers, of great use in lowness of spirits and fainting.

C H A P. XVI.

Of Dr. Stephen's Water.

THIS water has its name from Dr. Stephen, a physician of great learning and

Recipe for Ten Gallons of Dr. Stephen's Water.

Take of cinnamon, ginger, ground nutmegs, grains of paradise, the sweet fennel, and caraway, of each a handful; of the leaves of thyme, mother of sage, pennyroyal, rosemary, flowers of camomile, origanum, and lavender, each a handful; of clean proof spirit, ten gallons.

water, two gallons; digest all twenty-four hours, and then draw off ten gallons, or till the faints begin to rise. Dulcify with fine sugar to your palate.

This is a noble cephalic cordial and carminative; and also, in some degrees, an hysterie; good in all cholic pains in the stomach and bowels, and diseases of the nerves.

C H A P. XVII.

Of Surfeit Water.

THERE are two kinds of surfeit-water, one made by distillation, and the other by infusion; the former is generally called white *Surfeit Water*, and the latter red *Surfeit Water*.

Recipe for Ten Gallons of white Surfeit Water.

Take marigold-flowers, mint, centaury, rosemary, scordium, mugwort, carduus, rue, St. John's wort, balm, and dragons, of each seven handfuls; of the roots of piony, viper-grass, butter-burr, and angelica, of each one pound and a half; of galangal, calamus aromaticus, and of the seeds of angelica and caraway, of each four

I 3

ounces;

ounces; of the flowers of red poppies, four
fuls; proof spirit, twelve gallons; water,
gallons; digest for twenty-four hours;
draw off ten gallons, or till the sa-
rise; and dulcify with fine sugar.

'This is a good cordial, but would
worse, if the carduus, mugwort, :
John's wort, were omitted, as little
tues can be obtained by distillation;
ever, a good alexipharmac, carminat-
mache; and therefore good in all fla-
in the stomach and bowels, in nau-
feits, from whence it had its name.

Recipe for making ten Gallons of red S-

'Take of the flowers of red poppies,
eleven gallons of clean proof
digest them with a gentle heat for three
days; till the spirit has extracted all the
flowers: then press out the liquor from
the flowers, and add to the tincture of the sea-
way and coriander, and liquorice-root,
each ten ounces; of cardamoms and
each four ounces; of raisins stoned, four
ounces; of cinnamon, five ounces; of nutmegs,

and ginger, of each three ounces; of cloves, two drachms; of juniper-berries, three ounces; let the whole be digested three days, then press out the liquor, adding to it a gallon of rose-water; and then strain or filter the whole through a flannel bag.

This water is much superior to the preceding, as all the ingredients will give their virtues to the tincture, though they will not rise in distillation. It is a noble alexipharmac, it strengthens the stomach, and greatly assists digestion; it is also an excellent carminative, and good against the cholic and gripes: its cordial virtues renders it serviceable in all tremblings of the nerves, and depressions of the spirits.

CHAP. XVIII.

Of Wormwood Water.

THERE are two sorts of wormwood water, distinguished by the epithets of *greater* and *lesser*.

Recipe for making Ten Gallons of the lesser Composition of Wormwood Water.

Take of the leaves of dried wormwood, five
I 4 pounds;

pounds; of the lesser cardamom, two ounces; of coriander-seeds, one ounce; of clean proof spirit, eleven gallons; of water, one gallon; draw off ten gallons, or till the liquor begin to rise, with a gentle fire, and if you please, dulcify with sugar, or not, at pleasure.

This is a good stomachic and cordial, and on that account often called Wormwood Water.

*Recipe for Ten Gallons of the great
of Wormwood Water.*

Take of the common and small cardamoms, dried, of each ten pounds; of saffron, dried, of each twenty hairs; of the roots of galangal, ginger, calamus, and elecampane, of the seeds of each three ounces; and coriander, of each three ounces; of mace, cloves, and nutmegs, the lesser cardamom, and cubebes, of each two ounces; bruise the ingredients as they are, and let them stand twenty-four hours, in eleven gallons of clean proof spirit, and two gallons of water; draw off ten gallons, or till the liquor begin to rise, with a pretty brisk fire.

This is an excellent composition.

all diseases of the stomach, arising either from wind or a bad digestion. It is greatly in use in some parts of *England*, but comes too dear for the common sort of people; on which account a cordial water is often sold under the title of *the greater composition of wormwood water*, drawn from the leaves of wormwood, orange and lemon peel, *ealamus aromaticus*, pimento, and the seeds of anise and caraway; which being all cheap ingredients, the composition may be sold at a moderate price. A water drawn in this manner is a good carminative; but far inferior to that made by the above recipe.

C H A P. XIX.

Of Antiscorbutic Water.

THE scurvy being a disease very common in *England*, this antiscorbutic water will be of great use.

Recipe for making Ten Gallons of Antiscorbutic Water.

Take of the leaves of water-cresses, garden- and sea scurvy-grass, and brook-lime, of each

twenty handfuls; of pine tops, gern hound, and the lesser centaury, of handfuls; of the roots of bryony pointed dock, of each six pounds; seed, one pound and a half. Dige in ten gallons of proof spirit, and tw water, and draw off by a gentle fire.

This is a good water for the p pressed in the title, viz. against s orders. It is also good in tremblin orders of the nerves.

CHAP. XX.

Of Compound Horse-radish Water.

THERE are several methods of compound water; but the three fo cipes are the best that has hitherto

Recipe for making Ten Gallons of Horse-radish Water.

Take of the leaves of fresh gar grass, sixteen pounds; of fresh root, and the yellow part of Seville

of each eight pounds; of nutmegs, two pounds. Cut and bruise these ingredients, and digest them twenty-four hours in ten gallons of proof spirit and two gallons of water; after which draw off ten gallons with a gentle fire. Or,

Take of the fresh roots of horse-radish, nine pounds; of the leaves of water-cresses and of garden scurvy-grass, of each six pounds; of the outward, or yellow peel of oranges and lemons, of each nine ounces; of Winter's bark twelve ounces; of nutmegs, three ounces. Cut, bruise, and digest the ingredients in ten gallons of proof spirit, and two gallons of water, and draw off ten gallons as before. Or,

Take of the leaves of garden and sea scurvy-grass, fresh gathered in the spring, of each seven pounds; brook-lime, water-cresses, and horseradish root, of each ten pounds; of Winter's bark and nutmegs, of each ten ounces; of the outer peel of lemons, one pound; of arum root, fresh gathered, two pounds; proof spirits ten gallons, water two gallons. Bruise and slice the ingredients; digest the whole, and draw off ten gallons as before.

Either of the above recipes will produce an
I 6 excellent

excellent water, against all obstructions in the kidneys and other viscera. It is serviceable in the jaundice, cachexies, and in all scorbutic cases, it is a medicine; as it opens the minute pores of transpiration, and cleanses the other small glands, which are filled with particles to the detriment of their

C H A P. XXI.

Of Treacle Water.

THIS water is made in a very different manner, by different persons; but the following recipes are the best for this purpose.

Recipe for making Ten Gallons of

Take of the fresh and green hulse, four pounds and a half; of the red burr, three pounds; of angelicae wort, of each one pound and a half; of sarsaparilla, twelve ounces; of the leaves of scordium, of each eighteen ounces; of treacle, three pounds; digest them two days in twelve gallons of proof spirit; strain them into ten gallons of water; after which draw off

lons; to which add a gallon and a half of distilled vinegar. Or,

Take of the rind of green walnuts, five pounds; of rue, four pounds; of carduus, marigold, and balm, of each three pounds; of fresh gathered butter-burr roots, two pounds and a half; of burdock root, one pound and a half; of green scordium, twelve handfuls; of Venice treacle and mithridate, of each two pounds and a half; proof spirit, twelve gallons; and water, two gallons. Digest and draw off ten gallons, as before; to which add a gallon and a half of distilled vinegar.

Some instead of distilled vinegar unadvisedly add a proportional quantity of spirit of vitriol, or other mineral acid, to their treacle water; but this practice is very pernicious, and entirely alters the nature of the medicine. Vinegar is an acid made by a double fermentation, and therefore of a different nature from the acid juices of vegetables, whether oranges, lemons, citrons, limes, crabs, barbaries, &c. as also from those of minerals, whether vitriol, sulphur, &c. It is indeed, like them, acid on the tongue; but then it liquifies the blood, is anti-pestilential, suddenly cures drunkenness, surfeits, the plague, and does

does a thousand things both as a medicine, which they will not. mirable and sprightly alexiphaphic, to which, the vinegar added, tributes, and therefore good in few pox, measles, and other pestilentia.

C H A P. XXII.

Compound Camomile-flower

THE camomile flowers generally the double sort, consisting wholly flower leaves, without any appearance, or pistil, or the other parts of the flower, which in the single flowers are to be seen in the middle in form of yellow stamens. But though the double flowers are commonly used, they are not the best which ought to be chosen. The single flowers, or those which consist of only a single row of flower leaves, or petals, in form of rays, are to be preferred, because they have more virtue. It is indeed in these flowers, that great part of the virtue resides, and these are war double flowers.

Recipe for making Ten Gallons of Compound Camomile-flower Water.

Take of dried camomile flowers, five pounds ; of the outer peel of oranges, ten ounces ; of the leaves of common wormwood, and pennyroyal, of each twenty handfuls ; of the seeds of anise, cummin, sweet fennel, the berries of bay and juniper, of each five ounces. Digest these ingredients two days in ten gallons of proof spirit, and three gallons of water, and draw off ten gallons with a gentle fire.

This is a very good carminative and stomachic ; good in all cholies and other disorders of the bowels from wind. It also provokes the appetite, and promotes a good digestion. Its virtues as a stomachie will not be less when made from the double flowers ; but if intended as a carminative, it should be made with the single flowers.

C H A P. XXIII.

Imperial Water.

THIS eordial water has its name from the great opinion conceived of it by its first inventors ;

ors; and though their opinion justly founded, yet it is not at present in use as formerly.

Recipe for making Ten Gallons of .

Take of the dried peels of citron, of nutmegs, cloves, and cinnamon, a pound; of the roots of cypress, Fraxinus, and calamus aromaticus, of each eight ounces; of cardamom, clove, doary, galangal, and ginger, of each four ounces; of the tops of lavender and rosemary, of each sixteen handfuls; of the leaves of mint, and thyme, of each eight handfuls; of the leaves of white and damask roses, of each twelve handfuls. Digest the whole in ten gallons of proof spirit, and strain it into ten gallons of damask-rose water; after which, strain it again, and you will have ten gallons.

All the ingredients in composition are directed to one intention, and as such will exert their virtues by distillation; circumstances however will be said of many other compounds, which are of a very good cephalic, and of great service in nervous cases. It is also a very powerful cordial, especially if dulcified with fine sugar, and will be of service upon any sudden sickness of the head.

C H A P. XXIV.

Of Compound Piony Water.

THE piony, from whence this compound water takes its name, is a plant divided into male and female; but the former is the sort intended to be used in this composition. The male and female plants are distinguished both by their roots and leaves. The male has a shining blackish leaf, from which the female differs by being lighter coloured. The root of the male kind is more bulbous, and shorter branched than that of the female, whose shoots are much longer and thinner.

Recipe for making Ten Gallons of Compound Piony Water.

Take of the roots of male piony, twelve ounces; of those of wild valerian, nine ounces; of those of white dittany, six ounces; of piony seed, four ounces and a half; of the fresh flowers of lily of the valley, one pound and a half; of those of lavender, Arabian stæchas, and rosemary, of each nine ounces; of the tops of betony, marjoram, rue, and sage, of each six ounces; slice and bruise the ingredients, and digest

gest them four days in ten gallons
rit, and two gallons of water; after
off ten gallons. Or,

Take of the flowers of lilies
fresh gathered, and male piony rods
pounds; of cinnamon and cub
eight ounces; of rosemary and lav
of each two handfuls; of damas
two gallons. Digest these four da
lons of proof spirit, and draw off
before.

This is an excellent cordial, an
ceeded by nothing in all nervous
children and grown persons.

CHAP. XXV.

Of Nutmeg Water.

THE nutmeg is a kernel of a fruit
unlike the peach, and is separated
its investient coat the mace, before
to us; except when the whole fruit
in preserve, by way of sweetmeat
osity. There are two kinds of nut
called by authors the male, and
female. The female is the kind in

and is of the shape of an olive ; the male is long and cylindric, and has less of the fine aromatic flavour than the other, so that it is much less esteemed, and people who trade largely in nutmegs will seldom buy it. Besides this oblong kind of nutmeg we sometimes meet with others of very irregular figures ; but these are mere *Lusus Naturæ*, being produced by the same tree. The long or male nutmeg, as we term it, is, by the *Dutch*, called the wild nutmeg. It is always distinguishable from the others, as we know by its want of fragrance, as by its shape ; it is very subject to be worm-eaten, and is strictly forbid by the *Dutch* to be packed among the other, because it will be the means of their being worm-eaten also, by the insects getting from it into them, and breeding in all parts of the parcel. The largest, heaviest, and most unctuous of the nutmegs are to be chosen, such as are of the shape of an olive, and of the most fragrant smell.

Recipe for making Ten Gallons of Nutmeg Water.

Take of nutmegs, bruised, one pound ; proof spirit, ten gallons ; water, two gallons. Digest them two days, and then draw off ten gallons with a brisk fire. You may either dulcify it or not, as occasion offers. Or,

Take

Take of nutmegs, bruised, one
peel, two ounces; spirit, ten gal-
lons. Digest, and distill as be-

This is an excellent cephalic
ter; agreeable to the palate, con-
stomach, and grateful to the ner-
vous system; it easily and com-
pletely discusses wind and vapours
in the stomach and bowels, and is there-
fore service in the cholic and griping o-

CHAP. XXVI

Of Compound Bryony

THE white bryony-root, from
water takes its name, is one of those
we are acquainted with. It is
shape, and is frequently met with
ness of a man's arm, sometimes even
times that bigness: Its texture is
and spungy; considerably heavy,
that the thickest pieces are eas-
with one stroke of a knife; it is
is externally of a brownish or
colour, and of a pure white with
disagreeable smell, and an acrid
taste,

Recipe for Ten Gallons of Compound Bryony Water.

Take of the roots of bryony, four pounds; wild valerian root, one pound; of pennyroyal and rue, of each two pounds; of the flowers of fever-few, and tops of savin, of each four ounces; of the rind of fresh orange peel, and lovage-seeds, of each half a pound; cut or bruise these ingredients, and infuse them in eleven gallons of proof spirit, and two gallons of water, and draw off ten gallons with a gentle heat. Or,

Take of fresh bryony root, four pounds; of the leaves of rue and mugwort, of each four pounds; of the tops of savin, six handfuls; of fever-few, cintint, and pennyroyal, of each four handfuls; of orange-peel, eight ounces; of myrrh, four ounces; of *Russia* castor, two ounces; proof spirit, eleven gallons; water, two gallons. Digest and distill as before.

This composition is very unpalatable, but excellently adapted to the intention of an hysterick, in which cases it is used with success. It is very fuming upon the uterus, and therefore given to promote delivery, and forward the proper cleansing

cleansings afterwards; as also to obstructions, and in abundance of complaints. It is also good again in children, and of service in all complaints of either sex.

It may not be amiss to observe oily parts of the ingredients will often be foul and milky. If, therefore, one desires to have it fine and transparent must be removed as soon as the water appears the least turbid; be long before the faints begin to appear, however, is not the worse for with regard to its medicinal virtue when the liquor is milky, throw in alum to fine it; but this should not be done because it spoils the medicine.

CHAP. XXVII.

Of compound Balm Water, common de Carmes.

This has its name (*Eau de Carmel*) from the Carmelite friars, who were the inventors. The great profit accruing to these friars from the sale of this cordial, induced them

the method of making it a secret ; but, notwithstanding all their care, the secret has at last been discovered ; and the following is the method by which they prepare it :

Recipe for Two Gallons of Eau de Carmes.

Take of the fresh leaves of balm, four pounds ; of the yellow peel or rind of lemons, two pounds ; of nutmegs and coriander-seeds, of each one pound : of cloves, cinnamon, and angelica root, of each half a pound. Pound the leaves, bruise the other ingredients, and put them with two gallons of fine proof spirit into a large glass alembic (the figure of which, with its head, is represented on the plate, *Fig. 7.*) stop the mouth, and place it in a bath heat to digest two or three days. Then open the mouth of the alembic, and add a gallon of balm water, and shake the whole well together. After this, place the alembic in *Balneum Mariæ*, and distill till the ingredients are almost dry ; and preserve the water thus obtained in bottles well stopped.

This water has been long famous both at *London* and *Paris*, and carried from thence to most part of *Europe*. It is a very elegant cordial, and very extraordinary virtues are attributed to it ;

it ; for it is esteemed very efficacious in the lowness of spirits, but even in apoplexy it is greatly commended in cases of the stomach.

C H A P. XXVIII

Of Ladies Water.

THIS water has its name from being much fitter for the closet than any other water sold in a shop ; but as it is an excellent medicine, we could not omit giving it a place here.

Recipe for One Quart of Ladies Water.

Take of sugar-candy, one pound ; white wine, six ounces ; rose water, four ounces ; mix them into a syrup, and mix with it white wine (described Chap. xxx.) one pint. Add bergamot and musk, of each eighteen drachms ; saffron, fifteen grains ; yellow saffron, twelve grains ; and three drachms. Digest the whole three days and nights in a close vessel close stopped, and decant the liquor.

This is an extraordinary cordial, and the odors and fumes are not offensive. It is to be drunk alone, and therefore should be mixed with water, or some other liquid.

CHAP. XXIX.

Of Cephalic Water.

THIS water has its name from its use, being one of the best cephalic waters known.

Recipe for Ten Gallons of Cephalic Water.

Take of male piony-root, twelve ounces ; of angelica and valerian, of each four ounces and a half ; of the leaves of rosemary, marjoram, and balm, of the flowers of lavender, betony, piony, marigolds, sage, rosemary, lilies of the valley, and of the lime-tree, of each three handfuls ; of stæchas, or *French* lavender, four ounces and a half ; of red-roses and cowslips, of each six handfuls ; of rhodium wood and yellow saunders, of each two ounces and a half ; of nutmegs, four ounces and a half ; of galangals, an ounce and a half ; of cardamus and cubebs, of each one ounce. Bruise these ingredients, and digest them ten days in eleven gallons of proof spirit, and two gallons of water ; after which add three pounds of cinnamon, and digest two days more ; and then draw off ten gallons, with a pretty brisk fire, and dulcify it to your palate with fine sugar.

K

This

This is an excellent cordial, or
faintings or sinking of the spirits,
any sudden nausea or sickness a-

C H A P. -XXX

Of Heavenly Water; or Aqu

THIS water has its name from
union its inventors had of it; but is
not so much called for as former

Recipe for Ten Gallons of Heav

Take of cinnamon, mace, and
each three ounces; ginger, one
half; cloves, galangal, nutmeg,
moms, of each one ounce; zedoar
and a half; fennel-seeds, one
seeds of anise, wild carrot, and
half an onnce; roots of angelica,
lamus aromaticus, leaves of thyme,
pennyroyal, mint, mother of thyme,
ram, of each an ounce; flowers of
rosemary, and stæchas, of each
citron-peel, an ounce; bruise all
dients, and digest them three days
gallons of proof spirit, and so
water; after which draw off ten

a pretty brisk fire; and dulcify the goods with fine sugar, adding ambergris and musk, of each three scruples.

The perfumes ordered to be added with the sugar rendering the medicine offensive to some people, they may be omitted at pleasure. It is esteemed very efficacious in all nervous complaints, particularly palsies, loss of memory, and the like. In all decays of age, and languishing constitutions, it is exceeded by nothing in suddenly raising the spirits, and warming the blood.

C H A P. XXXI.

Of Spirituous Pennyroyal Water.

THE plant from whence this water has its name has been already described, Chap. xiii. Part II.

Recipe for Ten Gallons of Spirituous Pennyroyal Water.

Take of the leaves of pennyroyal, dried, fifteen pounds; proof spirit, ten gallons; water, two gallons: draw off ten gallons, with a gentle fire.

This is a good carminative, of use in cholics
K 2 and

and gripings of the bowels; also in the jaundice; it is of known efficacy in the menses and other disorders of the sex.

C H A P. XXXII

Of Compound Parsley Water.

THE plant from whence this is compounded, is the common parsley or an herb too well known to need description.

Recipe for Ten Gallons of Compound Parsley Water.

Take of parsley-root one pound, fresh horse-radish root, and juniper each fifteen ounces; the tops of St. John's-wort, and biting arsmart, and elder-flower each twelve ounces; the seeds of wild carrot and parsley, of each seven ounces; slice and bruise the ingredients. Boil them four days in eleven gallons of spirituous liquor; after which, draw off the liquor.

This is a very good diuretic, for expelling sand and other matter, whether gravel and stones. It is also good

arising from a stone in the bladder, and drains off all ill humours by urine.

CHAP. XXXIII.

Of Carminative Water.

THIS water has its name from its use, being an excellent carminative.

Recipe for Ten Gallons of Carminative Water.

Take of fresh camomile-flowers, four pounds; dill-seed, two pounds and a half; leaves of balm, origany, and thyme, of each one pound; seeds of anise and fennel, of each six ounces: cummin-seed, four ounces; peels of oranges and citrons, of each eight ounces; juniper and bay-berries, of each six ounces; cinnamon, eight ounces; mace, four ounces. Digest these ingredients, bruised, in eleven gallons of proof spirit, and two gallons of water; after which draw off ten gallons, and duleify it with fine sugar.

This is an admirable carminative, and therefore good in all cholicky pains and gripings of the bowels; and to remove sickness and nausea from the stomach.

CHAP. XXXIV.

Of Gout Water.

THIS water has also its name,
being of great service in that diste-

Recipe for Ten Gallons of Gout Water.

Take of the flowers of camomile, pennyroyal, lavender, marjoram, sage, and ground-pine, of each equal parts; myrrh, four ounces; cloves and nutmegs, each one ounce; roots of piony, pellitory of Spain, and cypress oil, each one ounce; the lesser cardamoms and mace, each half an ounce; nutmegs, two; and bruise these ingredients, and let them stand four days in eleven gallons of proof spirit; then draw off two gallons of water: then draw off the rest, and dulcify with fine sugar.

This is a very good water in all rheumatic diseases, and a continued moderate use of it will much strengthen and fortify the fibres, so as to prevent the charge of such juices upon the joints, as causes rheumatic and thrilitic pains and swellings. It is also good for the head.

use in palsies, epilepsies, and loss of memory ; particularly when these distempers proceed from old age, or when the principal springs of life begin to decay.

C H A P. XXXV.

Of Anhalt Water.

THIS water is supposed to have been invented by a celebrated physician of *Anhalt*, a province of the Circle of Upper Saxony.

Recipe for making Ten Gallons of Anhalt Water.

Take of the best turpentine, a pound and a half ; olibanum, three ounces ; aloes wood powdered, one ounce ; grains of mastic, cloves, July-flowers, or rosemary flowers, nutmegs and cinnamon, of each two ounces and a half ; saffron, one ounce : powder the whole, and digest them six days in eleven gallons of spirit of wine ; adding two scruples of musk, tied up in a rag ; and draw off in *Balneum Mariæ* till it begins to run foul.

This water is a high aromatic cordial, invigorates the intestines, and thereby promotes diges-

tion, and dispels flatulencies. It is
repute as a sovereign remedy for
pains arising from colds; as also in
lepsies, apoplexies, and lethargies,
fected being well rubbed with it.

CHAP. XXXVI.

Of Vulnerary Water; or, Eau d'.

THIS vulnerary water is great
abroad, and if properly tried, there
of its obtaining the same reputation

Recipe for Five Gallons of Vulnerary Water.

'Take of the leaves, flowers, and
freys, leaves of mugwort, sage, and b
eight handfuls; leaves of betony, sa
eye daisy, the greater figwort, plant
ny, vervain, wormwood and fennel,
handfuls; St. John's wort, birth-w
Paul's-betony, the lesser centaury,
bacco, mouse-ear, mint, and hyssop
two handfuls; cut them, bruise them
mortar, and pour on them three gal
wine, and two gallons and a half of
digest the whole six days with a ge

a vessel close stopped ; after which distill off, with a gentle fire, about five gallons, or till it begins to run milky from the worm.

This water is of excellent service in contusions, tumours attending dislocations, fractures and mortifications, the part affected being bathed with it. Some also use it to deterge foul ulcers, and incarn wounds, from whence it was called vulnerary water.

C.H A P. XXXVII.

Of Cedrat Water.

THE fruit called cedrat by the *French* is a species of the citron, called by botanists *citratum Florentinum fructu mucronato & recurvo, cortice verrucoso odoratissimo*, Florentine citron, with a pointed fruit, which is recurved, and a warted sweet smelling rind. This fruit is in so great esteem, that they have been sold at *Florence* for two shillings each, and are often sent as presents to the courts of princes. It is only found in perfection in the plains between *Pisa* and *Leghorne*; and though the trees which produce this fruit have been transplanted into other parts of *Italy*, yet they are found to lose much of that excellent taste with which they abound in those parts.

Recipe for a Gallon of Cedrat

Take the yellow rinds of five cedars, and steep them in two quarts of fine proof spirit, and two quarts of water; let them stand the whole twenty-four hours in a warm place, stop the vessel, and draw off the liquor; add thereto a pint of *Balneum Mariæ*, and dulcify with fine sugar.

This is esteemed the finest cordial in Italy; but as it is very difficult to procure the rinds of the cedar-tree here, I shall give the method of making a celebrated cordial, with the essence or tincture of the cedrat, which is often imported from Italy.

*Recipe for a Gallon of Cedrat Water
Essence of the Fruit.*

Take of the finest loaf-sugar reduced to powder, a quarter of a pound; put it into a mortar, with one hundred and twelve grains of nutmeg, and one ounce of the essence of cedrat; rub them together with a glass pestle, put them into a glass jar, and cover them with a gallon of fine proof spirits, and a quart of water. Place the alembic in *Balneum Mariæ*, and draw off one gallon, or more, when the spirit begins to rise; and dulcify with fine sugar.

You may make this water without the

by mixing the essence with the sugar, as before directed, and dissolving it in the spirit and water directed as above. But the water will be foul and milky, and therefore you must filtrate it through paper, which will restore its brightness and transparency.

But whatever method is used, you must be very careful that the spirit be entirely freed from its essential oil; and therefore if your spirit be not very cleanly rectified, it will be adviseable to use *French* brandy, lest the fine flavour so highly esteemed in this cordial be destroyed by the spirit.

C H A P. XXXVIII.

Of Bergamot Water.

THE bergamot is a species of the citron, produced at first casually by an *Italian's* grafting a citron on the stock of a bergamot pear-tree, whence the fruit produced by this union participated both of the citron tree and pear tree. The inventor is said to have kept the discovery a long time a secret, and enriched himself by it.

The bergamot is a very fine fruit both in taste
and

and smell; and its essence, or e
highly esteemed.

Recipe for a Gallon of Bergamot Water.

Take the outer rind of three bergamots, a
gallon of proof spirit, and two quarts of water.
Draw off one gallon of it in *Balneum Muriaticum*,
and dulcify it with fine sugar.

If you make your bergamot water, or
essence, or essential oil, observe the
directions as given in the preceding
chapter, for making cedrat water. One hundred
drops of the essence will be sufficient
for a quart of spirit; and so in proportion for
any smaller quantity.

C H A P. XXXIX.

Of Orange Cordial Water; or, Eau de l'Orange.

THE orange, called by the French *orange*,
is called by botanists *aurantium majorum*, or
rucoso cortice, the large worted orange.

It is a large and beautiful fruit, and
esteemed for the fragrancy of its essence.

common in diverse parts of *Italy, Spain, and Provence in France.*

Recipe for making a Gallon of Orange Cordial.

Take of the outer or yellow part of the rinds of fourteen bigarades; half an ounce of nutmegs; a quarter of an ounce of mace, a gallon of fine proof spirit, and two quarts of water. Digest all these together two days, in a close vessel, after which draw off a gallon with a gentle fire, and dulcify with fine sugar.

This cordial is greatly esteemed abroad, and would be the same here if sufficiently known.

If the orange peels are not easily procured, one hundred and forty drops of the essence may be used in their stead, and the water will be nearly equal to that made from the peels.

C H A P. XI.

Of Jasmine Water.

THERE are several species of jasmine, but that sort intended here is what the gardeners call *Spanish white, or Catalonian* jasmine. This

is

is one of the most beautiful of all
jasmine; the flowers much larger
than the others, of a red colour on the
extremely fragrant. But if the fine
species cannot be procured, those
common sort may be used; but the
flavour will be considerably augmented.

Recipe for a Gallon of Jasminum.

Take of Spanish jasmine flowers
one ounce; essence of Florentine citr
mot, eight drops; fine proof spir
itual water, two quarts. Digest two da
ys in a closed vessel, after which draw off one
dulcify with fine loaf-sugar.

This is a most excellent cordial,
to be more known here than it is.

C H A P. XLI.

Of the Cordial Water of Montrouge.

THIS water has its name from
where it was first made, and when
brought from thence is still in great

Recipe for a Gallon of the Cordial Water of Montpelier.

Take of the yellow rinds of two bergamots, or fifty drops of the essence of that fruit; cloves and mace, of each half an ounce; proof spirit, a gallon; water, one quart: digest two days in a close vessel, draw off a gallon, and dulcify with fine sugar.

C H A P. XLII.

Of Father Andrew's Water.

THIS water has its name from its inventor, and is greatly esteemed in France.

Recipe for a Gallon of Father Andrew's Water.

Take of white lily flowers, eight handfuls; orange flowers, four ounces; rose water, a quart; proof spirit, a gallon; water, a quart; draw off a gallon in *Balneum Mariæ*, and dulcify with fine sugar.

CHAP.

C H A P. XLIII.

Of the Water of Father D

THIS water has also its name
ventor, a jesuit of Paris.

Recipe for a Gallon of the Water of Barnabas.

Take of the roots of angelica,
of cinnamon and orris root, of each
ounce; bruise these ingredients
put them into an alembic, with
proof spirit and two quarts of water,
a gallon with a pretty brisk fire.

C H A P. XLIV.

Of the Water of the Four Fruits.

THIS water has its name from the
in its composition, namely, the
rentine citron, the bergamot, the
tron, and the Portugal orange...

Recipe for a Gallon of the Water of the Four Fruits.

Take of the essence of cedrat, five
ounces,

the essence of bergamot, thirty-six drops ; of the essence of citron, sixty drops ; and of the essence of *Portugal* orange, sixty-four drops ; fine proof spirit, one gallon ; water, two quarts : draw off with a pretty brisk fire till the faints begin to rise, and dulcify with fine sugar.

This is a very pleasant and odoriferous cordial, and in great esteem in *France*.

CHAP. XLV.

Of the Water of the Four Spices.

THIS water also derives its name from the four spices from whence it is drawn, viz. cloves, mace, nutmegs, and cinnamon.

Recipe for a Gallon of the Water of the Four Spices.

Take of cinnamon, two ounces : nutmegs and cloves, of each three drachms ; mace, six drachms ; bruise the spices in a mortar, and add proof spirit a gallon, and water two quarts. Digest twenty-four hours in a close vessel, and distill with a brisk fire till the faints begin to rise : and dulcify with fine sugar.

This

This is an excellent stomachic, gripes, & compressions of the spirits, and paralytic.

CHAP. XLVI.

Of the Water of the Four Seeds.

THIS water has its name from the four seeds from whence it is drawn, viz. the fennel, coriander, angelica, and anise.

Recipe for Ten Gallons of the Water of the Four Seeds.

Take of sweet fennel-seed, seven drachms ; of coriander-seed, nine ounces ; of the angelica and anise, of each three ounces. Pound these in a mortar, and put them into ten gallons and a half of proof spirit : add two gallons of water : draw off with a syringe when the faints begin to rise, and dilute with sugar.

This water is a very good carminative in cholics, nauseas of the stomach, & gripes of the bowels.

CHAP. XLVI.

Of the Divine Water.

THIS is one of those waters whose names have rendered them famous. The base of this water is orange-flowers, the other ingredients being added to diversify the flavour, and render it more agreeable.

Recipe for a Gallon of Divine Water.

Take of orange-flowers, fresh gathered, two pounds; coriander-seed, three ounces; nutmegs, half an ounce; bruise the nutmegs and coriander-seed, and put them together with the orange-flowers, into an alembic with a gallon of proof spirit, and two quarts of water: draw off the liquor with a gentle fire, till the faints begin to rise, and dulcify with fine sugar.

This is a very pleasant cordial, both with regard to its smell and taste: and on that account in great esteem abroad.

CHAP. XLVIII.

Of Roman Water.

THIS water has its name from it first at *Rome*: and from whence great quantities are still exported to different parts of Europe.

Recipe for a Gallon of Roman Water.

Take the outer or yellow peels of two oranges, two drachms of mace, bruised; a glass of white wine-spirit and two quarts of water: dry them over a gentle fire till the faints begin to rise, then sweeten with fine sugar.

This water is generally of a red colour, the former of which may be obtained by infusing in it a few grains of the red parts of clove July-flower; then strain it, by adding to the above a glass of white wine-spirit, when the colour is extracted, run it through the filtrating-bag, and it will be bright and clear.

CHAP. XLIX.

Of Barbadoes Water.

THERE is a great variety of waters called by this name, made by foreign distillers; but the following recipes will be sufficient to shew the distiller the method of making them, and how to vary the flavour of his waters, so as to adapt them to the taste of his customers.

Recipe for a Gallon of rectified Barbadoes Water.

Take the outer rind of eight large Florentine citrons; half an ounce of cinnamon bruised; and a gallon of rectified spirit. Distill to a dryness in *Balneum Marieæ*. Then dissolve two pounds of sugar in a quart of water, and mix it with the distilled liquor, and run it through the filtrating bag, which will render it bright and fine.

Recipe for making a Gallon of Amber coloured Barbadoes Water.

Take of the yellow rind of six bergamots, half an ounce of cinnamon, and two drachms of cloves. Bruise the spices, and digest the whole

six days in a gallon of rectified spirit; add a drachm of saffron, and let them stand six days longer in digestion; dissolve of fine sugar in a quart of water, the tincture, and run it through the filter.

After the same manner may be made waters of different kinds, by adding to the water either lemon-peels or orange-peels, instead of those of the camomile; or, by varying the spices.

CHAP. L.

Of Ros Solis.

The ros solis or sun-dew, from cordial water has its name, is a small plant with a fibrous root, from whence rise round hollowish leaves, on foot-stalks an inch long, covered and fringed with red hairs, which give a red cast to the plant. It grows in champaign and mossy places, in pale red moss, and flowers in May.

Recipe for Ten Gallons of Ros Solis.

Take of ros solis picked clean, cinnamon, cloves, and nutmegs,

ounces and a half; marigold-flowers one pound; caraway-seeds ten ounces; proof spirit ten gallons, and of water three gallons. Distill with a pretty brisk fire, till the faints begin to rise. Then take of liquorice root sliced half a pound; raisins stoned two pounds: red saunders half a pound; digest these three days in two quarts of water, and strain out the clear liquor, in which dissolve three pounds of fine sugar, and mix it with the spirit drawn by distillation.

Recipe for making Ten Gallons of Ros Solis by Digestion.

Take of ros solis clean picked three pounds; nutmegs, mace, cloves, and cinnamon, the seeds of caraway and coriander, of each three ounces; ginger, the lesser cardamom, zedoary, and calamus aromaticus, of each one ounce; cubebes and yellow saunders of each half an ounce; red saunders three ounces; red rose leaves dried three handfuls; proof spirit ten gallons; digest the whole six days in a vessel close stopped, and then strain off the clear liquor, and dulcify it with fine sugar. Or,

Take of ros solis picked three pounds; cinnamon

mon and nutmegs, caraway, seeds, of each three ounces; clo- gingēr, of each one ounce and bebs, cardamoms, zedoary, and c- ticus, of each half an ounce: re- three ounces; liquorice root slice- raisins stoned, one pound and a li- and saffron, of each three drachms whole eight days in ten gallons of strain off, and dulcify as before.

Recipe for Ten Gallons of Turin

Take of damask roses, orange of the valley, and jasmine-flower pounds and a half; cinnamon, cloves, three drachms: put these into an alembic, with four gallon water, and draw of three gallons, rate fire: to this water add sev- proof spirit, in which a dram of two drachms of saffron has been cify with fine sugar, and run the the filtrating bag.

All these different kinds of ro- cellent cordials, good in all depr- spirits, nauseas, and paralytic dis-

CHAP. LI.

Of Usquebaugh.

USQUEBAUGH, is a very celebrated cordial, the basis of which is saffron. There are different ways of making this famous compound ; but the following are equal to any I have seen.

Recipe for Ten Gallons of common Usquebaugh.

Take of nutmegs, cloves, and cinnamon, of each two ounces ; of the seeds of unise, caraway and coriander, of each four ounces ; liquorice-root sliced, half a pound ; bruise the seeds and spices, and put them, together with the liquorice, into the still, with eleven gallons of proof spirits, and two gallons of water : distill with a pretty brisk fire till the faints begin to rise. But as soon as your still begins to work, fasten to the nose of the worm two ounces of English saffron tied up in a cloth, that the liquor may run through it, and extract all its tincture ; and in order to this you should often press the saffron with your fingers. When the operation is finished, dulcify your goods with fine sugar.

*Recipe for making Ten Gallon
Usquebaugh.*

Take of cinnamon, ginger, an-
seed, of each three ounces; nutmeg
and a half; mace, cloves, and cub-
one ounce and a half. Bruise these
and put them into an alembic with
lons of proof spirit, and two gall-
and distill till the faints begin to ri-
four ounces and a half of English s-
a cloth to the end of the worm, as d-
preceding recipe. Take raisins,
pounds and a half; dates, three po-
rice-root sliced, two pounds; digest
hours in two gallons of water; s-
clear liquor, add it to that obtained
tion, and dulcify the whole with fi-

Recipe for Ten Gallons of Usquebaug

Take of raisins stoned, five pound
one pound and a half; cinnamon, h-
nutmegs, three ounces; cloves and i-
one ounce and a half; liquorice
saffron four ounces: bruise the sp-
liquorice, and pull the saffron in p-
these ingredients eight days in te-

proof spirit, in a vessel close stopped ; then filter the liquor, and add to it two gallons of *Canary* wine, and half an ounce of the tincture of ambergris.

Recipe for making Ten Gallons of French Usquebaugh.

Take of saffron three ounces, of the essential oil or essence of Florentine citron, bergamot, *Portugal* orange, and lemon, of each a hundred drops ; angelica-seed, vanellos, and mace, of each one ounce and a half ; cloves and coriander-seed, of each three quarters of an ounce ; bruise the seeds and spices, and put all into an alembic with eleven gallons of proof spirit, and two gallons of water ; and draw off with a gentle fire till the faints begin to rise, fastening to the nose of the worm four ounces of saffron in a cloth. When the operation is finished, dulcify the goods with fine sugar.

These waters are excellent cephalic cordials, and alexipharmacics ; and are excelled by nothing in suddenly reviving the spirits, when depressed by sickness, &c.

C H A P. LII.

Of Ratafia.

RATAFIA is a liquor in great request; almost persons are acquainted with it, but the true method of making it is known by few. There are various kinds of ratafia made from different fruits. I shall give directions for making those which are at present in request, which may serve as instances for making goods from any other kinds of fruit.

Of Red Ratafia.

There are three sorts of ratafia made from red fruits, distinguished by the name of *old*, *dry*, and *common*.

The fruits most proper to make ratafia are the black heart cherry, the red cherry, the black cherry, the honey cherry, the strawberry, the red gooseberry, and the mulberry.

These fruits should be gathered when ripe, of their respective seasons, and the best and most beautiful of them chosen for

Thus with regard to the heart cherry, it should be large, fleshy, and thorough, but not over ripe; for then a part of its juice will be evaporated on the tree; care must be also taken, that its colour be not decayed; but clear and almost transparent, and well tasted.

The black cherry, or, as it is often called, the black arvon, must be extremely ripe, because it is used to colour the ratafia when that of the other fails. The criterion of judging when it is thoroughly ripe, is its blackness; for, when in perfection, it is perfectly black. It should also be remembered that this fruit is better and more profitable in proportion to its sweetness; as the flavour of the ratafia will be rendered more agreeable, and a less quantity of sugar necessary.

As the gooseberry is an acid fruit, it must be chosen as ripe as possible. The fruit large, and the skin and husk so transparent as to see the seeds through it. The gooseberry should be used immediately after its being gathered; for it is very liable to ferment, which will inevitably spoil the ratafia. Gooseberries are chiefly used to render the ratafia dry or sharp, and consequently less soft; and therefore their quantity should always be proportioned to that intention,

The merry cherry, to be good, should be black, the skin transparent, full of deep black purple colour. The gooseberry should be taken, that it be fresh green, and not rotten. It corrects the acid juice of the other fruits by its sweetness, softening the liquor, and is of great service in counteracting the ratafia.

The mulberry is of the greatest service in counteracting the ratafia. It should be ripe, and fully ripe, at which time it has a deep purple colour. Its taste also greatly contributes to render the ratafia of a pleasant and agreeable flavour.

The strawberry greatly contributes to the rich flavour of the ratafia; but should be chosen ripe, and large; fresh gathered, and not bruised. Another caution necessary in the choice of this fruit is, that they are gathered in dry weather; for if gathered in rainy weather, they will want that fine taste, for which they are greatly valued.

The raspberry is also added to increase the richness of the liquor, to which its sharp taste greatly contributes; by

acidity it renders the flavour more brisk and agreeable. It must be fresh gathered, full ripe, and free from spots and mouldiness, which the fruit is particularly subject to.

Having thus concisely enumerated the qualities requisite in the several fruits, to render the ratafia of a rich and elegant flavour, we shall proceed to give the best methods for making ratafia from them.

Recipe for making red Ratafia fine and soft.

Take of the black heart cherries, twenty-four pounds; black cherries, four pounds; raspberries and strawberries, of each three pounds; pick these fruits from their stalks, and bruise them; in which condition let them continue twelve hours; press out the juice, and, to every pint of it add a quarter of a pound of sugar. When the sugar is dissolved, run the whole through the filtrating bag, and add to it three quarts of clean proof spirits. Then take of cinnamon, four ounces, of mace, an ounce; and of cloves, two drachms. Bruise these spices, put them into an alembic with a gallon of clean proof spirits, and two quarts of water, and draw off a gallon with a brisk fire. Add as much of

this spicy spirit to your ratafia as agreeable to your palate; about one usual proportion.

Ratafia made according to the will be of a very rich flavour, and elegant. It may be rendered more or less elegant, by adding or diminishing the spirit distilled from the spices.

Some, in making ratafia, suffer the juices of their fruits to ferment several days; this means the vinosity of the ratafia is increased; but, at the same time, the elegance of the fruits greatly diminished. If the ratafia be desired stronger and more vinous, it may be done by adding more of the expressed juice; by which means the flavour of the fruits may be preserved, and the ratafia rendered stronger.

It is also a method with some to put the fruit in a linen rag, and suspend them in the spirit. But if this method be taken, it will be necessary to augment the quantity of spirit five times the quantity of the expressed juice. There is no great difference in the two methods of adding the spirit; but that by suspending them in the ratafia.

quor is generally rendered less bright and transparent.

There is also another method practised in making ratafia, which is this : take the quantity of fruit proposed, bruise it, and immediately pour the spirit on the pulp. After standing a day or two, express the juice or spirit, filtrate it, and add the sugar and spices as before. But this method requires more spirit than the former, as it will be impossible to press it all out of the skins, and other parts of the fruit remaining, after the juice is extracted.

Of making fine and dry Ratafia from red Fruit.

Though the ratalia we have just mentioned will doubtless please the palates of many people, yet there are others who would prefer a different sort; it is therefore necessary to know how to make dry as well as sweet ratafia, if we are desirous of pleasing all sorts of palates.

Dry ratafia is prepared in the same manner as the preceding, but the ingredients are different.

An equal quantity of cherries and gooseberries

are necessary in making dry or because the acidity of the gooseberry gives the requisite flavour to this sort of liqueur; at the same time care must be taken that the gooseberries be fully ripe; for other gooseberries are more acid before than afterwards, yet that acidity must be removed, if your desired; it is acerb and robs the liqueur of its flavour. The same observation holds good with respect to the cherries; they must be well ripe, in making the soft ratafia.

Instead of black cherries, used in the composition of the preceding ratafia, mulberries may be used in this: the reason for this is, that the juice of the black cherry is less glutinous than that of the mulberry, and therefore less fit for making the liqueur. The mulberries must be the ripest that can be obtained, in order to give the best colour to the liquor.

More spirit and less sugar in proportion to the juice of the fruit is also required in this composition than in the foregoing; but, as to the spices, the same quantities must be added to both.

Recipe for making red Ratafia, fine and dry.

Take of cherries and gooseberries, of each thirty pounds; mulberries, seven pounds; raspberries, ten pounds. Pick all these fruits clean from their stalks, &c. bruise them, and let them stand twelve hours; but do not suffer them to ferment. Press out the juice, and to every point add three ounces of sugar; when the sugar is dissolved, run it through the filtrating bag, and to every five pints of liquor add four pints of clean proof spirit; together with the same proportion of spirit drawn from the spices in the foregoing composition.

But it may not be amiss to observe here, that different Distillers use different quantities of the spirit drawn from the spices. The best method therefore is to imitate the flavour most universally approved of, which may be easily done, by adding a greater or less proportion of the spiced spirit.

Of mixed Ratafia.

By mixed ratafia is meant the juices of fruits prepared, and ready to be mixed with the spirit when called for.

Recipe for making mixed Ratafia.

Ratafia is composed of cherries and brandy; of these the best are to be chosen, and in that condition suffered to stand two or three days to ferment. The juice is then to be strained off, the quantity of sugar and brandy added, and the whole put into a cask, and closed close. A lee or sediment will fall to the bottom of the cask, which sediment will be of great service in preserving the ratafia.

The proportion of black cherries in this ratafia, because the colour is greatly valued for, chiefly comes from that fruit,

The sugar must not be put in at once, as the acidness of the liquor would cause a considerable effervescence, but by a little at a time.

These instructions being observed, ratafia of this kind may be easily made. The spirit is not to be mixed with it, unless it is called for, a large quantity of it being at a small expence, when the fruit is in season, which cannot be done by any other methods.

Recipe for making mixed Ratafia.

Take of common cherries, thoroughly ripe, four hundred and fifty pounds; gooseberries, large and ripe, two hundred and twenty-five pounds; black cherries, ripe and large, fifty pounds. Bruise these fruits, and in that condition let them continue three or four days to ferment: then press out the juice, and add one fifth part of spirit; that is, if you have two hundred and fifty pints of juice, you must add to it fifty pints of spirit. When your spirit and juice are mixed, put them into a cask, and for every pint add three ounces of sugar. By this means your ratafia will be always ready to mix with spirit.

But as this proportion of spirit is but small, it will be necessary to taste your ratafia, at least, every month, lest it should ferment, and by that means lose both its flavour and colour. As soon therefore, as you perceive the least alteration in your ratafia, more spirit must be added to stop the fermentation; and by this method it may be kept the whole year.

If you have any ratafia remaining at the end of the year, you must mix it with that just made, adding a large proportion of black cherries; because

cause the colour in the old ratafia equal to that of the new. Or you your old ratafia a proper quantity juice of black cherries, which wi colour, and, in a great measure, its so that if your ratafia has been we it will, when mixed with fresh ju cherries, be but little inferior to the

Of White Ratafia.

As red fruits are the basis of tha ratafia, so, on the contrary, that mad juices of white fruits is denominated tafia.

There are various kinds of ratafia various fruits; but I shall only give making three or four sorts, which w cien for all the rest, as the method the same in all.

Recipe for making Ratafid from the white Frontiniac Grape.

The berries of this kind of grape and grow extremely close upon the which are very long, and have com shoulders; the fruit, when ripe, has a

ky flavour; but it is commonly very late in the autumn before these grapes are in perfection; and the berries being so very close upon the bunches, detain the moisture in the centre, so that they often perish: to prevent which some curious persons look over their vines, soon after the grapes are formed, and with a pair of scissars, cut out all small ones, so as to leave the others at a moderate distance, whereby the sun and air are easily admitted, which dissipates the moisture, and prevents their perishing. There is another kind of this grape, called by some the white *Frontiniac* of *Alexandria*, and by others the *Jerusalem* muscat, which is a very large grape, and when ripe, an excellent fruit; but is rarely brought to perfection in *England*. The berries of the *Jerusalem* muscat are of an oval shape, and very large. They grow very loose on the bunches, are very fleshy and firm, and when ripe, are of a greenish white, and a delicate flavour.

Either of these kind of grapes will make very fine ratafia; but which ever of them are chosen, they must be picked from the stalks, and only the finest berries made use of. The stones must also be picked out; for if they are bruised with the berries, the fine flavour of the juice will be greatly diminished.

When

When you have picked the grape stalks, and taken out the stones, press the juice, and filtrate it through a flannel. Then add the quantity of sugar and flavour it to your mind, with a spirit from spices, in the manner explained.

The general proportion of sugar and spirit is, one pound to twenty pints of the juice, five pounds of sugar, ten pints of spirit, and a small quantity you please of the spicy spirit.

To make the spicy spirit, take of nutmegs, four ounces; spirit of wine, two pints, and draw off the whole in *Balneum*.

By the same method you may make a syrup from the red *Frontiniac*; except that the grapes, when bruised, must be suffered to stand three or four days before the juice is drawn out; because the colour, which resides principally in the skins of the grapes, will not otherwise be extracted.

The berries of the red muscat, or red *Frontiniac*, are about the size of those of the common grape, but grow much thinner on the bunch; the grape, when thoroughly ripe, has the

and highest flavour of any yet known: but it must have a dry soil and a south aspect, otherwise it seldom ripens well in *England*. Besides the above grape, there is another, called by some, red museat of *Alexandria*, and by others, red *Jerusalem* museat. This is not quite so late in ripening as the white museat of *Alexandria* above described; and for that reason more esteemed. The berries of this kind are not quite so large as those of the white, but of the same form, and equal in goodness.

Of Ratafia from Peaches.

The ratafia made from the peach is the finest and richest flavour of any made from stoned fruits. It is, however, necessary to gather the peach when thoroughly ripe, but at the same time, not to suffer it to hang too long on the tree: for, as on the one hand, it will not acquire its delicious flavour and smell till thoroughly ripe, so, on the other, it will lose both if suffered to hang on the tree after it has attained to a full maturity. Another necessary caution is to gather it in fine warm weather, and near the middle of the day, because then both the flavour and smell are in the greatest perfection.

It

It is also requisite to make choice
per sorts of peaches; for there is
difference in the flavour of these fruit.
Deneys reckon above thirty sorts
but not more than half that number
for making ratafia. I shall therefore
short description of those that are
best known, that the young distiller may not be
led in making ratafia from peaches.

1. The early purple (called by the French
pourprée hâtive.) This tree hath smooth
the flowers large and open; the fruit
round, and of a fine red colour; the flesh
white, but very red at the stone; the
juice, which has a rich vinous flavour.
This peach is ripe about the middle of

2. The large, or *French mignon*.
The leaves of this tree are smooth, and the flowers
and open. The fruit is a little obliquely
swelling out on one side, and of a large size.
The juice is very sweet, and of a light colour;
the flesh white, but very red at the stone.
This peach is small, and easily separates from the stone.
This peach is ripe in the middle of

3. The *chevreuse*, or *belle chevreuse*.

tree hath smooth leaves, and its flowers are small and contracted. The fruit is of a middling size, a little oblong, and of an elegant colour. The flesh is white, but very red at the stone, from which it separates; full of a rich sugary juice, and ripens toward the latter end of August.

4. The red magdalen, called by the French about Paris; *Magdeleine de Courson*. The leaves of this tree are deeply sawed, and the flowers large and open. The fruit is large, round and of a fine red colour. The flesh is white, but very red at the stone, from which it separates. The juice is very sugary and of a rich flavour. It is ripe the latter end of August.

5. *Smith's Newington*. This tree hath sawed leaves, and large open flowers. The fruit is of a middling size, and of a fine red next the sun. The flesh is very firm and white, but very red at the stone, to which it closely adheres. It has a rich sugary juice, and is ripe the latter end of August.

6. The chancellor. The leaves of this tree are smooth and the flowers small and contracted. The fruit is shaped somewhat like the belle chèvreuse, but rounder. The flesh is white and melting,

melting, and separates from the it is of a fine red colour. The skin and the juice remarkably rich. It the end of August.

7. The bellegarde; or, as the the *gallande*. This tree hath n and small contracted flowers. Th large and round, and of a deep p on the side exposed to the sun. white, melting, and separates fro where it is of a deep red colour. very rich. This peach is ripe a ginning of September.

8. The bourdine. The leaves o smooth, and the flowers small an The fruit is large, round, and of a lour next the sun. The flesh is wh and separates from the stone, wh fine red colour. The juice is vin It is ripe the beginning of Sep greatly esteemed by the curious.

9. The Lisle; or, as the *French petite violette hâtive*. This tree leaves, and small contracted flower is of a middle size, and next the

violet colour. The flesh is of a pale yellow, melting, full of a rich vinous juice; but adheres to the stone, where it is very red. This fruit is ripe the beginning of September.

10. The old *Newington*. The leaves of this tree are sawed, and the flowers large and open. The fruit is fair, large, and of a beautiful colour next the sun. The flesh is white, melting, and closely adheres to the stone, where it is of a deep red colour. The juice is very rich and vinous. It ripens about the middle of September.

11. The rambouillet, commonly called the rambullion. This tree hath smooth leaves, and large open flowers. The fruit is of a middling size, rather round than long; deeply divided by a furrow in the middle; of a fine red colour next the sun, but of a light yellow next the wall, The flesh is melting, of a bright yellow colour, except near the stone, from which it separates, where it is of a deep red. The juice is rich and of a vinous flavour. This fruit ripens about the middle of September.

12. The pourprée, or, as the French generally call it, *Pourprée tardive*, the late purple. The leaves of this tree are very large, and sawed, the shoots

shoots strong, and the flowers smelted. The flesh, except near the stalk, which it separates, and where it is melting, and of a rich sugary juice, ripe till near the end of September.

13. The nevette. The leaves of this tree are smooth, and the flowers small and white. The fruit is large, somewhat longer than broad, and of a bright red colour next the sun, and of a pale yellow on the other. The flesh is white, melting, and full of a rich juice, and very red from the stalk, except near the stalk, from which it separates. It ripens about the middle of September, and is esteemed one of the best peaches.

14. The royal. This tree hath smooth leaves, and small contracted flowers. The fruit is round, and of a deep red on the side towards the sun, but of a pale yellow on the other. The flesh is white, melting, and full of a rich juice, except near the stalk, from which it separates, where it is of a pale yellow colour. This fruit is ripe about the middle of September.

15. The monstrous pavie of pompey. The leaves of this tree are smooth, the

and open. The fruit is very large and round, many times fourteen inches in circumference. The flesh is white, melting, and closely adheres to the stone, where it is of a deep red colour. The side next the sun is a beautiful red, and the other of a pale flesh colour. It ripens about the end of October, and when the autumn is warm, is an excellent peach.

The above description of the different kinds of peaches proper for making ratafia, will be of use to the young artist, as the fine flavour of this liquor in a great measure depends on a proper choice of the fruits used in the composition; and if the instructions relating to the perfections and ripeness of these fruits are observed, an excellent cordial may be easily made in the following manner:

Take your peaches, bruise them, and instantly strain out their juice through a piece of strong linen. In this juice, without any mixture of water, dissolve your sugar; and when the sugar is melted, add the quantity of spirit. No spices must be used in this ratafia, the fine flavour of the peach being far preferable to all spices in the world. The quantity of either the sugar or spirit may be augmented or lessened according to

to your own judgment, or in proportion to the price of your ratafia.

As soon as the spirit is added to the juice of the peaches, the whole must be strained through a flannel bag, put into bottles, corked, and stoppered; for the fine flavour of the peaches will be lost, unless the bottles are very well stoppered. Some also cover the cork with a piece of white paper, which is not a bad caution.

If you would have your ratafia of a clear colour, you must let your bruised peaches stand in a warm place for a day or two; by which means the colour of the skin, and that of the flesh will be extracted, and give your ratafia the colour desired.

Of Orange-flower Ratafia.

The orange-flower has been already mentioned on page 123. I shall therefore only give some account of the orange-flowers used in making ratafia. They should be large, in their full perfection, gathered before the heat of the sun, and carefully picked from the stalks, &c. Some blanch the orange-flowers by putting them into a small quantity of water, and boiling them a few minutes over the fire.

by this method the most volatile parts of the flower are evaporated, by which the ratafia will lose much of its delicate flavour.

The best way, therefore, is to use the orange-flowers, without any previous boiling.

Recipe for making Ten Gallons of Orange-flower Ratafia.

Take of orange-flowers, fresh gathered, and clean picked from their stalks, &c. five pounds, and infuse them six days in five gallons of clean proof spirit. Dissolve fourteen pounds of sugar in five gallons of water; and after straining the spirit from the flowers, mix it with the syrup, and filtrate the whole through a flannel bag.

Some instead of common water use the orange-flower water; but it will be necessary in pursuing that method to take care that the water be fresh made, and very fragrant: for, otherwise, instead of improving, you will greatly injure the fine flavour of your ratafia.

The foreign distillers keep two sorts of orange-flower ratafia; one they call *single*, and the other

double. The former is made according to the above recipe; but in making the latter, double the quantity of orange-flowers will considerably augment the proportion, which will be needless to give a recipe for. A sort of ratafia, which they call *double*, may be made by this process, which is exactly the same.

Ratafia of Portugal Orange.

Ratafia may be made from any sort of orange, but that of the *Portugal* orange is the best.

The oranges must be chosen fair and ripe; and the outer or yellow peel taken off. The juice of the oranges must then be pressed out, dulcified with sugar, and mixed with the spirit: after which the orange-peel must be added, and after a proper time, the whole filtrated through a flannel bag.

Recipe for making Three Gallons of Orange Ratafia.

Take of the juice of *Portugal* oranges, three gallons; clean rectified spirit, one

pounds of sugar; and the outer peel of ten oranges. Let the whole infuse a fortnight, and then filter the liquor through a flannel bag.

Some, instead of infusing the peel as directed in the above recipe, put the peel into the spirit, and distill it in *Balneum Mariæ*; after which they add the spirit to the dulcified orange juice, and filtrate it as before.

The foregoing recipes for making ratafia from different fruits, &c. will be sufficient to instruct the young distiller in the method necessary to be pursued for making cordials of this kind; for it would be tedious to give formulas for making all kinds of ratafia kept by different distillers. The method in all is nearly the same; and the proportion of sugar and spirit may be easily discovered by a few experiments. I shall therefore conclude this chapter with giving a recipe for making what is called by our *English* distillers ratafia, though a very bad composition.

Recipe for making Ten Gallons of common Ratafia.

Take of nutmegs, eight ounces; bitter almonds, ten pounds; *Lisbon* sugar, eight pounds;

ambergris, ten grains: infuse these three days in ten gallons of clean water, and filter through a flannel bag for

The nutmegs and bitter almonds bruised; and the ambergris rubbed with *Lisbon* sugar in a marble mortar, are infused in the spirit.

C H A P. LIII.

Of Gold Cordial.

THIS cordial has its name from being formerly used in its composition; later experiments have abundantly demonstrated that gold can add nothing to its virtue, which is now generally omitted.

Recipe for making Ten Gallons of Gold Cordial.

Take of the roots of angelica, four pounds; raisins stoned, two pounds; coriander seed, a pound; caraway-seeds and cinnamon, half a pound; cloves, two ounces; quorice-root, of each one pound; port wine, eleven gallons; water, two gallons: the liquorice, and figs, must be sliced, l

are added. Digest two days, and draw off by gentle heat, till the faints begin to rise, hanging in a piece of linen fastened to the mouth of the worm an ounce of *English saffron*. Then dissolve eight pounds of sugar in three quarts of rose water, and add it to the distilled liquor. Some distillers, instead of saffron, colour their goods with burnt sugar, but by this means the cordial is greatly impaired in its virtues. Or,

Take of the juice of alcherimes, five ounces; cloves, two ounces and a half; musk and ambergris, of each half a drachm; loaf-sugar, ten pounds; proof spirit, eleven gallons: digest the whole a fortnight in a close vessel, and filter through a flannel bag for use. Some add thirty leaves of gold; but the medicine is not at all the better for it.

Either of the above recipes will produce an excellent cordial; good in tremblings, faintings, and lowness of spirits, &c. also in nauseas and gripping pains of the stomach and bowels.

C H A P. LIV.

Of Cardamum, or All-fa-

THIS water has its name from ingredients in its composition ; and it tries is greatly used by the poorer s

Recipe for making Ten Gallons of

Take of pimento, caraway, an seeds, and lemon-peel, of each th of malt spirits, eleven gallons; gallons. Draw off with a gentle with ordinary sugar, and make up the strength you desire with clean

This is rarely called for, unless sort of people, who are induced to its cheapness ; though it is a better many drawn from dearer ingredie excellent carminative, and is often mirabilis.

CHAP. LV.

Of Geneva.

THERE was formerly kept in the apothecaries' shops a distilled spirituous water of juniper; but the vulgar being fond of it as a dram, the distillers supplanted the apothecaries, and sold it under the name of Geneva. The common sort, however, is not made from juniper-berries, as it ought to be, but from oil of turpentine; the method of which we shall give in the sequel of this chapter.

Juniper-berries are a roundish fruit, of the size of a pea. They wither and wrinkle in the drying, and we meet with them variously corrugated, and usually covered with a bluish resinous dust when fresh. They should be chosen fresh, plump, full of pulp, and of a strong taste and smell. They are usually imported from *Germany*, though we have plenty of the trees in *England*. It is but small with us, rarely rising to more than three or four feet in height, and scarcely ever exceeding five or six. Some of the juniper shrubs are males, some females of the same species; the male shrubs produce in April

or May a small kind of juli with a pie very large, and full of farina; the s duce none of the juli, but only t which do not ripen til the second then do not immediately fall off, so no uncommon thing to see three set or the berries of three different ye on the same tree.

If you make use of *English* berries be fully ripe before they are gathered in order to preserve them, spread them on a boarded floor, leaving the windows open, and turn them once a day, till they are dry; after which pack them up close, so that no air may come to them, and they will keep good all the year. Some, who have no time to dry, throw them altogether in a heap in the corner of the room, where they continue to dry for use: but the berries will not keep long by this method, as by being packed in a cask, they are subject to contract a mouldiness, which will give a taste to the goods greatly to their vantage.

Some distillers, as soon as their berries are gathered, put them into casks, and steep them in spirits of wine; by this method

are indeed well preserved, without any danger of contracting an ill smell, which they are very apt to do by the other methods, unless the greatest care be taken; but then it must be remembered, that the spirit will extract great part of their essential oil, in which their virtues consist, and consequently the berries themselves will be rendered of little value. If, therefore, you preserve your berries in this manner, you should put into each cask or jar, only the quantity you use for one charge of your still; and when you have occasion to use them, put both the spirits and berries into your alembic.

Thus your berries will be finely preserved, without any loss either of their essential oil, or the spirits made use of to preserve them.

Recipe for making Ten Gallons of Geneva.

Take of juniper-berries, three pounds; proof spirit, ten gallons; water, four gallons. Draw off by a gentle fire till the faints begin to rise, and make up your goods to the strength required with clean water.

The distillers generally call those goods which are made up proof by the name of Royal Geneva;

for the common sort is much below
gallons of spirit being sufficient for
lons of geneva. Nay, what is gene-
the common alehouses is made in the
manner:

Take of the ordinary malt spirits,
oil of turpentine, two ounces; bay
handfuls. Draw off by a gentle fire till
begin to rise, and make up your ga-
strength required with clean water.

In this manner is the common ge-
and it is surprising that people shou-
themselves to drink it for pleasure.

There is a sort of this liquor calle-
geneva, from its being imported fro-
which is greatly esteemed.

The ingredients used by the Dut-
ever, the same as those given in the
of this chapter, only instead of mal-
use *French* brandy. In the first part
Treatise we have sufficiently shewn
of *French* brandy, and in what its
consists; and, also, that by the hel-
spirit, cordial waters may be made w-

goodness as those drawn with *French brandy*. If, therefore, the distiller be careful in distilling and rectifying his malt spirit, he may make geneva equal to that of the *Dutch*, provided it be kept to a proper age; for all spirituous liquors contract a softness and mellowness by age, impossible to be imitated by art.

C H A P. LVI.

Of *Cherry Brandy*.

THIS liquor is greatly called for in the country, and is made different ways. Some press out the juice of the cherries, and having dulcified it with sugar, add as much spirit to it as the goods will bear, or the price it is intended to be sold for. But the common method is to put the cherries clean picked into a cask, with a proper quantity of proof spirit, and after standing eighteen or twenty days, the goods are drawn off into another cask for sale, and about two-thirds of the first quantity of spirits poured into the cask upon the cherries. This is suffered to stand about a month to extract the whole virtue from the cherries, after which it is drawn off as before; and the cherries pressed to take out the spirit they had absorbed. The proportion of

cherries and spirit is not very nicely
the general rule is to let the cask be
filled with cherries, and then filled up
with spirits. Some add to every twenty
spirit, half an ounce of cinnamon, a
cloves, and about three pounds of
which the flavour of the goods is con-
increased. But in order to save exp-
only the spices and sugar are general-
but also a great part of the cherries, a
ficiency supplied by the juice of ele-
Your own reason, therefore, and the
can sell your goods for, must direct
choice of your ingredients.

By the same method you may mak
brandy; and if the colour of the go-
deep enough, it may be improved by
of cherry brandy.

C H A P. LVII.

Of Honey Water.

THIS water has its name from th-
its composition ; though that ingre-
of very little service to the water, if
ording to the usual method.

Recipe for making a Gallon of Honey Water.

Take of the best honey and coriander seeds, of each one pound; cloves, one ounce and a half; nutmegs, and guin Benjamin, of each an ounce; vanilloes, number four; the yellow rind of three large lemons: bruise the cloves, nutmegs, coriander-seeds, and Benjamin, cut the vanilloes in pieces, and put all into a glass alembic, with one gallon of clean rectified spirit, and after digesting forty-eight hours, draw off the spirit in *Balneum Mariæ*. To a gallon of the above spirit, add damask-rose water, and orange-flower water, of each a pound and a half; musk and ambergris, of each five grains. Grind the musk and ambergris, with some of the water in a glass mortar, and afterwards put altogether into a digesting vessel, shaking them well together, and let them circulate three days and three nights in a gentle heat, then let all cool; filter and keep the water in bottles well stopped for use.

This water was first made by that faithful chemist, Mr. *George Wilson*, for King *James II.* It is an anti-paralitic, smooths the skin, and gives one of the most agreeable scents imaginable. Forty or sixty drops put into a pint of clean water, are sufficient for washing the hands and face; and

and the same proportion to punch dial water, gives a very agreeable fl

CHAP. LVIII.

Of Unequalled Water, generally French Name l'Eau sans Pareille.

THERE are two sorts of this drawn considerably below proof, one by filtration, and the other without the receiver being removed as soon as to rise. The latter is much the dearer than the former.

Recipe for making a Gallon of the common sans Pareille.

Take the outer peels of twelve cit quarts of fine proof spirit, and a quart Put all into a glass alembic, and distil ness in *Balneum Mariae*: filter the w put it into bottles well stopped.

This is the common sort, and wi nerally sold here under the name *Eau reille*.

*Recipe for making a Gallon of the best Sort of
Eau sans Pareille.*

Take of the essence of cedrat, bergamot, orange, and lemon, of each two drachms; rectified spirit, a gallon; water, two quarts. Put all into a glass alembic, and distill in *Balneum Mariæ* till the faints begin to rise, when the receiver must be immediately removed.

Some, to save the trouble and expence of distillation, mix the essences with the spirit of wine, in the manner before mentioned in the chapter for making *Hungary* water; but this is greatly inferior to that made by distillation.

CHAR. LIX.

Of the Water of Bouquet.

THIS water has its name from its inventor, and is greatly esteemed abroad for its sinell. It is indeed drawn from the most odoriferous flowers, and therefore it is no wonder that it is held in great esteem.

Recipe

Recipe for making a Gallon of Bouquet.

Take of the flowers of white lily
nish jessamine, of each half a pound
flowers, and those of the jonquil at
each four ounces; damask roses,
Let those be fresh gathered, and i
put into a glass alembic with a gal
proof spirit, and two quarts of wa
the alembic in *Balneum Mariae*, dra
faints begin to rise. You may use sp
instead of proof spirit; but it will be
necessary that it be entirely inoc
otherwise your water will fall shor
sired perfection.

C H A P. LX.

Of Cyprus Water.

THIS water is only a dilute tincture
bergris; but as it is used by those who
of that perfume, and known by the
Cyprus Water, or *Eau de Cypre*, I
omit giving the recipe here, intending
full account of ambergris in a
chapter.

Recipe for making a Gallon of Cyprus Water.

Take of the essence of ambergris, half an ounce; put it into a glass alembic, with a gallon of spirit of wine, and two quarts of water. Place the alembic in *Balneum Mariæ*, and draw off till the faints begin to rise.

C H A P. LXI.

Of Vestal Water, or Eau de Vestale.

THIS is a very agreeable water, and has been long in use in several parts of *Europe*.

Recipe for making a Gallon of Vestal Water.

Take of the seeds of daucus creticus, or candy carrots, two ounces; spirit of wine, a gallon; water, two quarts. Distill in *Balneum Mariæ*, till the faints begin to rise. Then add to the spirit drawn over an ounce of the essence of lemons, and four drops of the essence of ambergris; re-distill in *Balneum Mariæ*, and keep the water in bottles well stopped for use.

C H A P. LXII.

Of Beauty Water, or Eau de

THIS water has its name from washing the face, and giving a smell. It is drawn from thyme and which gives it a very elegant odour.

Recipe for making a Gallon of Be

Take of the flowery tops of thyme, marjoram, of each one pound; proof spirit, two quarts; water, one quart. Draw a strong decoction of *Resinum Mariæ*, till the faints begin to appear; then strain it, and keep it close stopped for use.

C H A P. LXIII.

Of Royal Water.

THIS water has its name from being esteemed as the most excellent of all scents. It is compounded of the cedrat, nutmeg, mace, from whence the most elegant perfume is produced, and no water is at present equal to this. There are two sorts

ter, one produced by a single distillation, and the other by a double distillation, and thence called rectified, or double distilled royal water.

Recipe for a Gallon of Royal Water.

Take of mace, one ounce; nutmegs, half an ounce; essence of cedrat, or bergamot, two drachms; put these into a glass alembic (after bruising the spices) with five quarts of fine proof spirit, and draw off one gallon in *Balneum Mariae*.

Recipe for making a Gallon of double distilled Royal Water.

Take of mace, one ounce; nutmegs half an ounce; bruise them, and put them into an alembic, with six quarts of fine proof spirit, and draw off five quarts with a gentle fire. Then take the spirit drawn off and put it into a glass alembic, with two drachms of the essence of cedrat, or bergamot, and draw off a gallon in *Balneum Mariae*.

Either of these recipes will produce an elegant water, but the latter greatly exceeds the former.

C H A P. LXIV.

*Of the Tincture and Essence of A
Musk, and Civet.*

1. AUTHORS have been long divided respecting the origin of ambergris; some regarding it for a vegetable juice, which either fell into the water from the trunks or branches of some trees growing on the sea-coast, or was excreted from their roots which ran out into the sea; some for an animal product, formed either by a secret process from the combs, or the dung of birds; and others very circumstantially recorded that it was produced in the whale. These opinions however, now looked upon as false; ambergris being universally allowed to be a mineral production, of the number of bitumens. It is a dark, heavy, and frothy substance, which generally rises up out of the earth in a fluid form, under water, where it is by degrees hardened into the masses we see it in.

Ambergris, in its natural or common state, is a lax and coarse substance of an irregular texture, friable, and so light as to swim on water. It is of a pale grey colour, with

tinge of brown in it; but pieces perfectly and uniformly of this colour are rare; what we usually meet with is composed of whitish, yellowish, and blackish granules; and in proportion as there is more or less of this whitish matter in these masses, it is more or less scented and valuable. It is found in pieces of perfectly irregular figures, and from the bigness of a pea to those of ten, twenty, or more pounds; nay, there have been masses found of more than two hundred weight.

It should be chosen in clean and not over friable pieces, of a pale grey colour, and as uniform as possible in its structure, with small black specks within.

There are two sorts of essences made from this perfume; one without addition of any other odiferous substance, and the other from ambergris compounded with musk and civet.

Recipe for making the Essence of Ambergris.

Take of ambergris and white sugar-candy, of each three drachms; grind them well together in a glass mortar, adding to them by slow degrees, five ounces of rectified spirit of wine; digest the whole in a matrass, (represented fig. 8.) well stopped,

stopped, for four days, and then a clear tincture or essence, which keep well stopped for use.

Recipe for making the compound Ambergris.

Take of ambergris and white sugar each two drachms; musk, twelve grains; two grains: grind all these well together in a glass mortar, adding, by degrees, four ounces of rectified spirit of wine; digest and strain, and you have a clear essence for use, as in the preceding recipe.

2. Musk is a dry, light, and friable substance, of a dark blackish colour, with sometimes a purplish or blood colour in it. It is somewhat smooth and unctuous to the touch, and of a highly perfumed smell. It is said to us sewed up in a kind of bladder, or bag, of skin, covered with a brownish skin, are the real bags in which the musk is contained while on the animal. Musk should be kept of a very strong scent, and in dry places; and must be kept close shut up in a leaden box, by which means it will retain its smell, and not grow too dry.

Recipe for making the Essence of Musk.

Take of musk and white sugar-candy, of each one drachm; rub them well together in a marble mortar, adding, by degrees, during the rubbing, five ounces of rectified spirit of wine; put the whole into a matrass, digest three days in a gentle heat, and pour off the clear essence, which keep in a bottle well stopt for use. Some add a few grains of civet to their essence of musk, which considerably augments the fineness of the perfume.

S. Civet is produced like musk, in bags growing to the lower part of the belly of an animal. It is of different colours, from a pure lively whitish, to a black; but the nearer it approaches to the white the better it is; of an extremely strong smell, and a bitterish pungent taste.

The essence of civet is rarely used alone, but of great service in making additions to other odoriferous waters, and therefore I shall here give the method of making it.

Recipe for making Essence of

Take of civet and double refine each two drachms; rub them well in a glass mortar, adding, by degrees, of rectified spirit of wine: put the matrass, digest three days in a gentle heat, and then pour off the clear essence for use. The essences in this chapter are, proper chemical preparations, and therefore not directly applicable to the business of the distiller, yet, they are often added to perfumed waters, made, I thought the above recipe would be unacceptable to the reader.

C H A P. LXV.

Of Faints, and the Uses they may be put to.

IN many of the preceding recipes it has been directed the receiver to be removed as soon as the faints begin to rise; because otherwise he would contract a disagreeable taste. It is not, however, to be understood that the faints are to be thrown away, nor that the still immediately stopped; for

from being of no value, notwithstanding they would be of great disadvantage if suffered to run among the more spirituous parts of the goods before drawn off. As soon, therefore, as you find the clear colour of the goods begins to change of a bluish or whitish colour, remove the receiver, place another under the nose of the worm, and continue the distillation as long as the liquor running from the worm is spirituous, which may be known by pouring a little of it on the still head, and applying a lighted candle to it; for if it is spirituous it will burn, but otherwise, not. When the faints will no longer burn on the still head, put out the fire, and pour the faints in a cask for that purpose; and when, from repeated distillations, you have procured a sufficient quantity of these faints, let the still be charged with them almost to the top. Then throw into the still three or four pounds of salt, and draw off as you would any other charge, as long as the spirit extracted is of a sufficient strength; after which the receiver is to be removed, and the faints saved by themselves as before.

The spirits thus extracted from the faints will serve in several compositions as well as fresh; but they are generally used in aniseed water, be-

cause the predominant taste of the entirely cover that they had before from other ingredients.

C H A P. LXVI.

*Of Eau de Luce.**Recipe for Two Gallons.*

TAKE of oil of amber, one ounce
ly rectified spirit of wine, four poun-
them into a bottle, and let them stand
five days, shaking the bottle from time
by which means the spirit will be
pregnated with the oil. Then put into
pregnated spirit, four ounces of the
amber finely powdered, and let it stand
days, by which means you will have
tincture of amber, which decant c

The tincture of amber being thus
of the strongest spirit of sal ammoniac
pounds, and add it to the foregoing
gether with eight pounds of high
spirit of wine. Thus will you obtain
brated water called *Eau de Luce*, so
request, and so useful in all fainti-
ness of spirits.

C H A P. LXVII.

A Water for those afflicted with the Stone and Gravel.

Recipe for Three Gallons.

TAKE of the best flowers of the white thorn, eight pounds; of nutmegs bruised, six ounees; infuse them together six days in a close vessel with two gallons of generous white wine, and the same quantity of proof spirits: after which draw the water by a gentle distillation till the faints begin to rise.

This water is of great use in fits of the stone and gravel, a glass of it often proeuring ease in the most racking pains of that dreadful dis-temper.

C H A P. LXVIII.

Of Compound Gentian Water.

Recipe for Five Quarts.

GENTIAN root, slied, three pounds; leaves and flowers of the lesser centaury, of each eight ounces; infuse the whole in six quarts of proof

spirits, and one quart of water, and water till the fants begin to rise.

This water is frequently used as and commended as a deterger, and vice in dropsies, the jaundice, a structions of the viscera; a glass drank twice a day.

CHAP. LXIX.

Of Aromatic Cephalic Water.

THIS water has its name from smell, and great use in all swimmin diness in the head.

Recipe for Two Gallons.

Nutmegs, mace, cloves, and ci each two ounces; galangals and c maticus, of each one drachm; flo vender, three handfuls; infuse th nine quarts of proof spirit; and dr gallons by gentle distillation.

This is an excellent composition; admirable cordial, and may be ren pleasant by sweetening it with sugar.

CHAP. LXX.

A Water for the Scurvy.

THE following composition has been long in the practice of an eminent physician, but never before (that I know of) published; and, therefore, I presume, the following recipe will not be unacceptable.

Recipe for Three Gallons.

Camomile flowers, one handful; juniper berries, four ounces; of the water-dock root, five ounces; of Winter's bark bruised, two ounces; garden and sea scurvy-grass fresh gathered, of each ten handfuls; sassafras-chips, two ounces; nutmegs, bruised, one ounce and a half; watercresses and brook-lime, of each three handfuls. Digest the whole ten days in three gallons and a half of proof spirit; and draw off three gallons by a gentle distillation.

This is an excellent cordial, and by a continual use, will deterge and cleanse the kidneys, and other parts of the viscera, and enable them to perform their proper functions. It will also remove all foulnesses of the skin, and render it smooth and beautiful.

CHAP. LXXI.

Of Compound Castor Water

WE have already given an account, page 141, to which the reader

Recipe for a Gallon and an half

Of the best *Russia* castor, eight ounces; flowers of lavender, two ounces; saffron, of each one ounce; cinnamon, a quarter of a pound; mace and cloves, of each one ounce: digest the whole in two gallons of spirit, and draw off two gallons by distillation.

This is an extraordinary cephalic, excellent in all disorders which happen in the nerves. Thirty or forty drops often taken, in a glass of generous wine, will be found of great service in epilepsies, palsies, head-aches, and other complaints from the same origin.

C H A P. LXXII.

Of the Saffron Cordial.

THIS cordial has its name from saffron being its principal ingredient.

Recipe for Two Gallons..

Of the best *English* saffron, half a pound; nutmegs and mace, of each two ounces; cinnamon and calamus aromaticus, of each one ounce: digest the whole three days in nine quarts of proof spirit, and draw off two gallons with a gentle fire.

This is a powerful cordial, and a small quantity of it is sufficient, in a glass of wine.

C H A P. LXXIII.

Of the Anti-epileptic Cordial.

THIS cordial has its name from its great use in apoplexies, and diseases of the nervous system.

Recipe for One Gallon.

Take of the flowers of lavender, rosemary, marjoram, and sage, of each four handfuls; of

castor, four ounces; of camphire, three drams; of spirit of wine, a gallon and a half; digest the whole four days, and draw off, by a funnel, one gallon. When the receiver is ready, add to it, into the spirit, forty drops of oil of lavender; twenty drops of oil of amber; and forty drops of oil of mace and juniper.

This is an excellent cordial, and very useful in all spasmotic affections, and disorders of the nerves, especially those in the head. Twenty drops is a full dose, in a glass of water, or other generous wine.

C H A P. LXXIV.

Of Spirit of Scurvy-Grass.

THIS spirit has been long in great repute, and very powerful against the scurvy.

Recipe for One Gallon.

Scurvy-grass freshly gathered and washed, fifteen pounds; horse-radish root, six pounds; spirit of wine rectified, one gallon; and a quart of water: digest the whole in a close vessel for four days, and draw off a gallon, with a funnel.

This is of great service in all scorbutic cases, and is given from twenty to an hundred drops.

CHAP. LXXV.

Of the Golden Spirit of Scurvy-Grass.

THIS spirit has its name from its golden colour, which it acquires from the gamboge dissolved in it, after drawn from the ingredients.

Recipe for One Gallon.

Take of the foregoing spirit of scurvy-grass, a gallon, and dissolve in it a pound of gamboge, and decant the tinged spirit carefully from the sediment.

This is highly esteemed among the common people; but should be used only by strong constitutions; it may be given from ten to sixty drops.

CHAP. LXXVI.

Of the Aromatic Cordial.

THIS cordial is highly valued in Germany; and would doubtless obtain the same repute here, if equally known.

Recipe for One Gallon

Cinnamon, three ounces; the
mum-seeds husked, one ounce and
pepper and ginger, of each one o
the whole two days in a gallon ar
proof spirit, and draw off a gallon
heat.

This cordial deserves to be more
it is at present, being perhaps e
thing of the kind hitherto known.

CHAP. LXXVII.

Of the Stomachic Cordi

THIS cordial is much used in excellent stomachie ; and in all persons should be equally fond of it, if we are acquainted with its virtues.

Recipe for a Gallon.

Take of raisins stoned, one pound, four ounces; of caraway seed, of the lesser cardamum husked, ounce; of Virginia snake-root, six

of Winter's bark, three ounces: digest the whole three days in a gallon and a half of proof spirit, and draw off one gallon.

This cordial would prove a much better stomachic than the usual bitters, so commonly drank in wine: the ingredients being far more friendly to nature than those from whence the common bitter tinctures are extracted.

CHAP. LXXVIII.

Of the Cordial of Health.

THIS cordial, which is well known in *Italy*, has its name from its tendency to promote the blessing of health.

Recipe for a Gallon of this Cordial.

Take of the roots of Angelica, calamus aromaticus, galangal, gentian, and zedoary, of each one ounce; of the lesser cardamum seeds, cinnamon, long pepper, mace, and nutmegs, of each one ounce and a quarter: digest these ingredients twenty-four hours, in a gallon and a half of proof spirit, and draw off a gallon by a gentle heat.

This is an excellent cordial, and if
with fine sugar, and tinctured with
will be highly agreeable.

C H A P. LXXIX.

Of the compound Cordial of Virginia S-

THIS is a new composition, but
bid fair for becoming a favourite co-

Recipe for making One Gallon

Take of Virginia snake-root, half
of Venice treacle, four ounces; of
and nutmegs, of each three ounces:
whole in a gallon and a half of
and draw off a gallon.

C H A P. LXXX.

Of the Bezoardic Cordial

THIS is one of the most powerful
hitherto discovered, and will probab-
in its value, as it is more known in t-

Recipe for a Gallon and a Half of the Bezoardic Cordial.

Take of the roots elecampane, angelica, zedoary, and Virginia snake-root, of each six ounces; of saffron, four ouuces and a half; of myrrha, cinnamon, and dried citron peels, of each three ounces; of the leaves of scordium, and rue, of each three handfuls; of Venice treacle, ten ounces; of opium, one ounce; of rectified spirit of wine, a gallon and a half; and of white wine, two quarts: digest the whole ten days in a close vessel, draw off a gallon by a gentle heat, and sweeten the whole with loaf-sugar.

This is only to be taken at going to rest, and will then answer all the intentions of a cordial and cephalic. It may be given from two drachms to an ounce.



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